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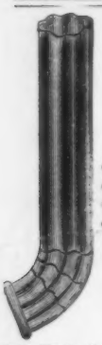

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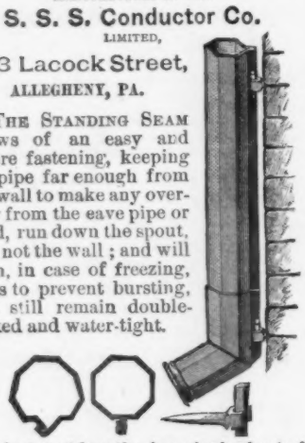

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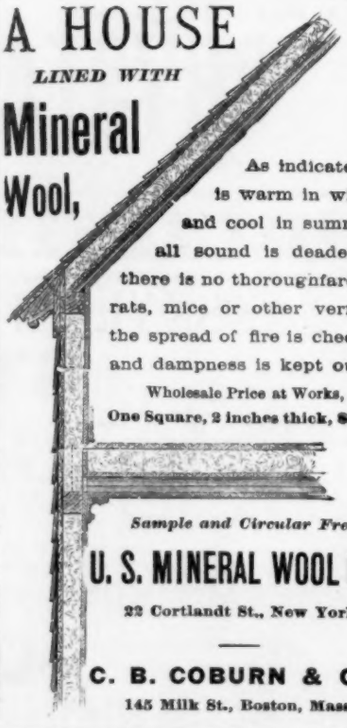
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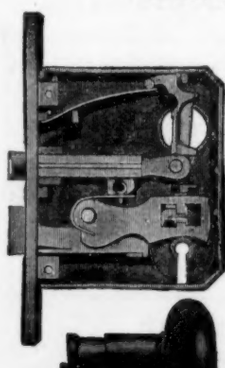

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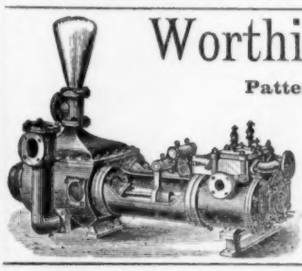

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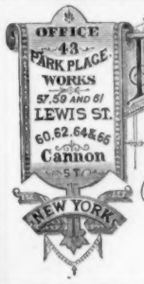

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Reported for the American Architect and Building News.

BRICK. — ₱ M.	New York. (Wholesale Prices.)	Boston.	Chicago. (Prices to Builders and Contractors.)	Philadelphia.
Common: *Cargo afloat.*				
Pale	$3 00 @ $3 50	Eastern	Building Brick	Hard
Jersey	5 50 @ 6 00	7 00 @ 7 50	6 00 @ 7 00	@ 8 00
Long Island	@	Bay State Hard		Salmon
Up River	5 75 @ 6 25	9 00		@ 6 00
Haverstraw Bay	6 25 @ 6 50	Domestic Com.	Indiana Pressd	Stretchers
" 1st	6 50 @ 6 75	8 00 @ 9 00	16 00 @ 28 00	@ 11 00
Hollow	@ 13 00	Domestic Face	St. Louis Fronts	Pressed
Fronts:		19 00 @ 20 00	@ 27 00	20 00 @ 23 00
Croton, Brown	12 00 @ 13 00	Philadelphia		End Headers, all colors
" dark	13 00 @ 14 00	40 00 @ 45 00		@ 65 00
" red	13 00 @ 14 00	Phila. mould		Edge & End all colors
Chicago pressed		50 00 @ 80 00	22 00 @ 29 00	@ 85 00
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 00 @ 41 00		@ 50 00	
Glens Falls — white	30 00 @ 35 00	Glens Falls		
Philadelphia	24 00 @ 25 00	25 00 @ 26 00	@ 45 00	
Trenton	24 00 @ 25 00		38 00 @	
Milwaukee		Glens Falls	25 00 @	
Moulded:		Mould.	60 00 @ 100 00	
Clark's Glens Falls — Red	25 00 @ 27 00	30 00 @ 35 00	30 @	
" — White	30 00 @ 35 00	35 00 @ 40 00	35 @	
White " Mold	45 00 @ 60 00	45 00 @ 60 00	55 00 @ 65 00	
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	Dom. @ 65
Enamelled (edge and end)	90 00 @ 115 00	@	@ 120 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Rosendale Cement	@ 1 00	@ 1 40	*Not Sold.*	1 50 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland, English (Gibbs)	2 50 @ 3 10	@ 3 20	3 00 @ 3 25	@ 3 50
" " (K. B. & S.)	2 75 @ 3 10		3 35 @ 3 50	@ 3 25
" " (Burham)	2 50 @ 2 80		3 15 @ 3 35	@ 3 00
" " (White's)	2 65 @ 3 00			
" German (Alsen)	2 50 @ 3 00	3 00 @ 3 50	3 15 @ 3 35	@ 25
" " (Fewer)	2 45 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" " (Vorwohler)	2 50 @ 3 25		3 00 @ 3 25	
" " (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 75	3 00 @ 3 2
" " (Lagerdofer)	@ 2 70	*Not sold.*	*Not sold.*	*Not sold.*
" " (Hanover)	2 50 @ 3 00		3 15 @ 3 35	2 50 @ 3 00
" French (Lafarge)	3 50 @ 4 50	*Not sold.*	3 75 @ 4 25	4 50 @
" American (Saylor's)	2 15 @ 2 30	2 15 @ 2 50	2 75 @ 3 00	2 50 @ 3 00
Selenitic		1 65	*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 50 @ 3 75
Keene's coarse	5 00 @ 6 50	@ 7 50	8 00 @ 9 00	6 50 @ 7 00
" superfine	8 75 @ 11 00	@ 11 50	12 00 @ 13 00	11 50 @ 12 00
Lime:			*Not sold.*	
Lime of Teil	@ 5 00			
Hydraulic Lime	@ 1 45	@ 1 45	65 @ 75	White Mash
Chicago Lime in bulk			80 @ 90	1 25 @ 150
Wisconsin "				1 00 @ 1 00
Rockland and Rockport, (Com.)	@ 1 00	@ 1 15	*Not sold.*	
Rockland and Rockport, finish	@ 1 20	@ 1 20	*Not sold.*	
State, com. cargo rates (nom.)	@ 90	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	@ 1 25	1 65 @ 1 90	@ 1 75	2 00 @ 2 25
" (casting)	@ 1 35	@ 2 25	@ 2 00	2 25 @ 2 50
Hair (Cattle) ₱ *bush*	21 @ 25	@ 30	30 @ 35	20 @ 25
" (Goat)	30 @ 35	@ 30	35 @ 40	28 @ 33
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	@ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		75 @ 2 00
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine	@		80 @ 90	75 @ 1 25

(Continued on page vi.)

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	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia (Prices to Builders and Contractors.)
Foundation:				
Dimension	@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ℔ perch	8 50 ℔ cord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone,				
Longmeadow		75 @ 85		
Kibbe		85 @ 95		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub.ft.	1 35 @ 2 00
Amherst } Ohio	90 @ 95	90 @ 1 00	55 @ 65	80 @ 1 10
Berea } Ohio	75 @ 1 00	80 @ 90	45 @ 55	
Berlin } Ohio	75 @ 1 00	80 @ 90	55 @ 65	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick and Nova Scotia	@ 1 00	75 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble (℔ *cu. ft.*)				
Lee, Mass.	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 6 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 6 00	2 50 @ 4 00
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	—@—
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 6 00	
Slate: Roofing (℔ *square*)				
" green	7 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	6 25 @ 7 00
" " unfading	@ 5 75	@ 5 75		
" purple	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" red	@ 15 00	13 00 @ 14 00	—@16 00	@ 12 00
" black, Lehigh	—@—	Brownville, Me.	7 20 @ 7 60	@ 4 00
" " Chapmans	—@—	6 50 @ 9 00	7 30 @ 8 00	@ 4 50
" Unfading Black, Monson, Me.	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	5 50 @ 8 00
Tiles, Am. ℔ M	@		*Not sold.*	@ 15 00
N. Peach Bottom, warranted unfading				@ 3 85
LUMBER.—℔ M.				
Boards: (*Ordinary dimensions.*)				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 60 00	44 00 @ 46 00	65 00 @ 75 00
" 2d quality	55 00 @ 60 00	42 00 @ 48 00	40 00 @ 44 00	55 00 @ 60 50
" 3d quality	18 00 @ 22 00	35 00 @ 40 00	37 00 @ 42 00	18 00 @ 22 00
Spruce	@ 25 00	11 00 @ 14 00	*Not sold.*	@ 22 50
Hemlock	ea. 17 @ 18	11 00 @ 12 50	@ 10 00	12 50 @ 15 00
Yellow pine	20 @ 40	30 00 @ 38 00	@ 28 00	17 00 @ 20 00
Cypress	@	32 00 @ 40 00	@	40 00 @ 55 00
Clapboards:				
Pine	@	33 00 @ 55 00	9 00 @ 20 00	—@—
Spruce	@	23 00 @ 35 00	*Not sold.*	—@—
Framing Timber:				
Pine			10 50 @ 13 50	25 00 @ 35 00
Spruce	13 50 @ 16 00	13 50 @ 15 00	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	10 00 @ 13 00	12 00 @ 13 00
Yellow pine	18 00 @ 25 00	23 00 @ 26 00		25 00 @ 30 00
Laths:				
Pine	@	2 25 @ 2 35	1 75 @	—@—
Spruce	2 10 @ 2 15	2 00 @ 2 25	*Not sold.*	2 35 @ 2 40
Shingles:				
Pine, shaved ℔ M	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 00	@ 4 50	1 85 @ 2 45	
Spruce, sawed "	1 50 @ 2 00	@ 1 50	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	30" $10 @ 28
Cedar, split ℔ M	@	@	*Not sold.*	24" 8 @ 21
Cedar, sawed "	@	2 00 @ 4 00	@ 2 00	20" 5 50 @ 14
Cypress. Split....7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 5½	Piles 6c. ℔ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ .1	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. (*First Qual. Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	45 00 @ 50 00
Cherry	80 00 @ 120 00	60 00 @ 90 00	75 00 @ 85 00	65 00 @ 90 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	70 00 @ 85 00
Mahogany, Baywood	@ 180 00	150 00 @ 160 00	150 00 @ 180 00	120 00 @ 150
" St. Domingo	@ 350 00	120 00 @ 350 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	70 00 @ 80 00
Sycamore quartered		50 00 @ 65 00	45 00 @ 50 00	70
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	56 00 @ 65 00	100 00 @
Rosewood ℔ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 120 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil,* ℔ *lb.*)				
White lead, Am.	5½ @ 6	@ 6½	@ 5½	4 @ 5½
" Zinc, "	5 @ 8½	@ 8	7 @ 11	4 @ 6
Red, Am.,	6 @ 6½	6 @ 6½	@ 5½	
" Venetian	6 @ 10½	7 @ 12	1½ @ 2¼	7 @ 10
" Vermilion	65 @ 70	55 @ 60 dry	55 @ 60	Am. 14 @ 22
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	12 @ 20
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	7 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	8 @ 20	8 @ 20	9 @ 15
Green, Paris,	25 @ 40	25 @ 40	16 @ 35	16 @ 22
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	8 @ 12
Blue, ultramarine	12 @ 18	18 @ 30	10 @ 35	11 @ 35
Oil, linseed, (raw) (℔ gal.)	51 @ 53	48 @ 53	50 @ 52	52 @ 55
" " boiled (℔ gal.)	54 @ 55	51 @ 56	53 @ 55	57 @ 59
Turpentine (℔ gal.)	33 @ 34	42 @ 49	35 @ 36	@ 45
Varnish, coach (℔ gal.)	@	1 50 @ 6 00	1 25 @ 2 00	1 75 @ 5 25
Shellac (℔ gal.)	@	2 50 @ 3 00	3 25 @ 4 00	1 10 @ 1 75
Putty ℔ ℔	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting ℔ cwt.	50 @ 90	1 @ 1½	1 @ 2	1 @ 1½
Paris white, (Eng.,) ℔ cwt.	2 @ 3	2 @ 3	2 @ 2½	1½ @ 1½
Litharge, Am. ℔ cwt.	5½ @ 5½	6½ @ 7	6½ @ 10	6½ @ 7½
Sienna (burnt) ℔ cwt.	12 @ 17½	14 @ 20	4 @ 16	9 @ 14
Umber, " ℔ cwt.	11 @ 16½	14 @ 20	@ 10	9 @ 14

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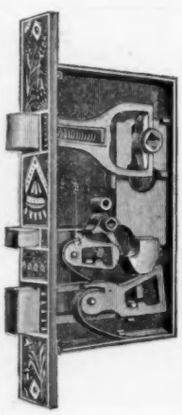

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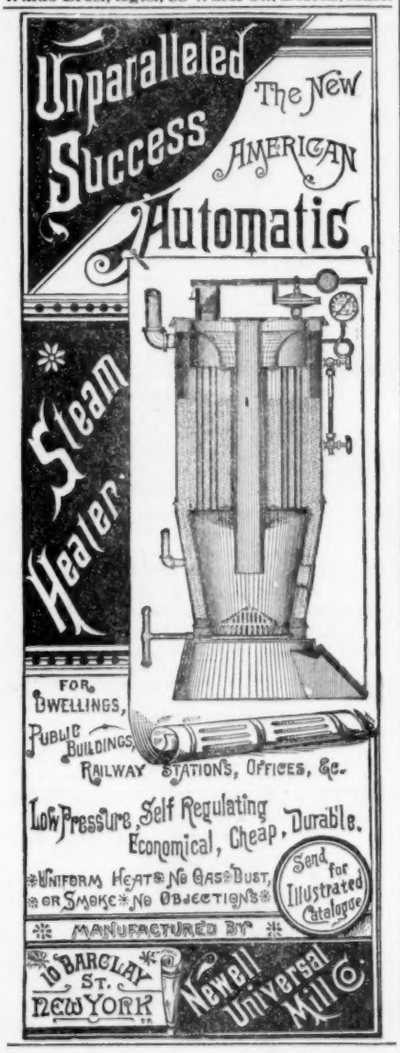
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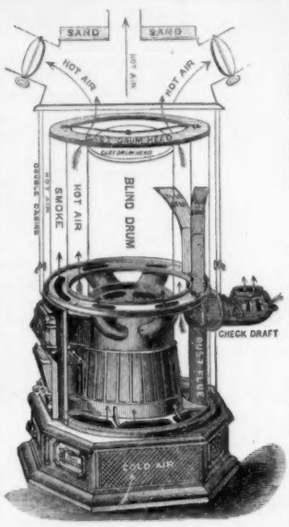

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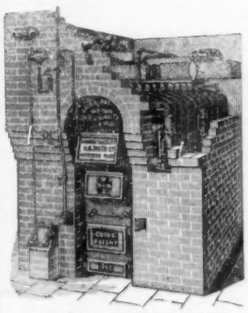
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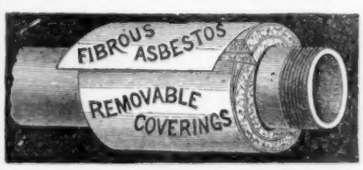

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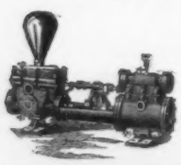

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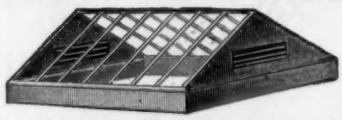

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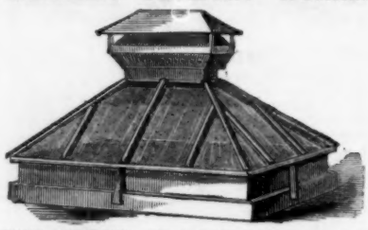

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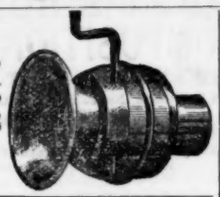

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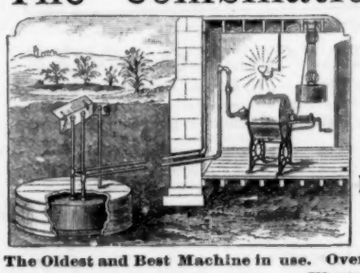

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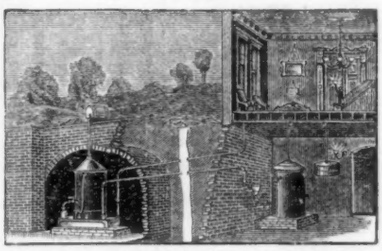

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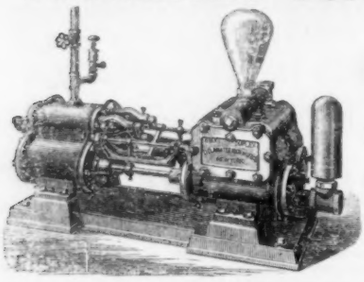

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JULY 18, 1885.

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THE new building law for the city of New York, which has just been published, proves to be in many respects better and more convenient than that which it supersedes; and although we are rather disappointed to find that some of the improvements which might have been adopted have not been, the statute, on the whole, marks a decided advance in the official regulation of construction in this country. Among its other merits, the text of the new law embodies many regulations and decisions of the Inspector, which have hitherto formed, so to speak, a part of the common law in regard to building operations, but, not appearing in the official edition of the statute, were only to be learned by architects at the expense of a good deal of trouble and annoyance; and these, particularly the younger ones, will be glad to have at least the greater part of what they are expected to know presented to them in shape for use. One of the principal points of difference between the new and the old law relates to the thickness of brick walls; stone walls, by the way, being entirely ignored in both laws. According to the former statute, no authority could be obtained for building any brick walls less than twelve inches in thickness. The powers of the law seem to have assumed that no New Yorker, however poor, would condescend to live in anything less imposing than a four-story house; and they obliged the builder of a house ten feet high to make all the walls exactly as thick as if it were fifty-five feet high. This provision, by unreasonably increasing the cost of small dwellings, has undoubtedly tended strongly to drive the poorer people of the city into the tenement-houses, which form the reproach of New York; and the new law, very wisely, as we think, modifies the rule so far as to allow houses not more than twenty feet wide, and thirty feet high, to be built with eight-inch walls above the basement, and blocks of houses twelve and one-half feet wide, and not over fifty feet high may be built with every alternate party-wall eight inches thick. There is no question that an eight-inch wall, which is, in proportion to its mass, the strongest wall which can be built with bricks, possesses ample strength, if properly built, for carrying the floors and roof of a dwelling house of such modest dimensions; and although the brick-makers may regret the change, hundreds of independent and home-loving workingmen will welcome it as bestowing upon them the long-desired privilege of building and owning houses on terms as favorable as those which their brethren in Philadelphia and other cities enjoy.

FOR dwelling-houses of more ambitious character the new rules require walls in some cases thicker and in others thinner than those specified in the old law. The gradation of thicknesses is, however, made with much more discrimination than under the old law, and the future high dwelling-houses will have walls at once less expensive, lighter and stronger than those of similar buildings constructed under the recent regulations. If we take as an example an apartment-house with walls one hundred and ten feet high, we find that under the old law all the walls would be required to be twenty-four inches thick to a height of seventy feet above the curb, and twenty inches thick from that point to the top, making the average thickness above the curb twenty-two and fifty-five one-hundredths inches; while the same walls under the new law would be twenty-eight inches thick to a height of fifteen feet above the curb, twenty-four inches thick thence to a height of sixty feet, then twenty inches thick to a height of ninety feet, and sixteen inches thick from this point to the top. These dimensions actually give a far stronger and more stable wall than those specified in the old regulations, the advantage in strength being, roughly speaking, about seventeen per cent, and in stability at least thirty per cent, yet the average thickness of the wall above the curb on the new model is exactly twenty-two inches, in place of the twenty-two and fifty-five one-hundredths of the old model, and costs, notwithstanding its great superiority, two and one-half per cent less. Similar provisions apply to the walls of warehouses, which are, in general now only required to be four inches thicker than those of dwelling-houses of the same height. These modifications alone in the old law will save many thousands of dollars every year to the owners of real estate in New York, with positive advantage to the general character of construction in the city.

IT is unfortunate that the same care which has been displayed in amending the sections relating to the thickness of walls should not have been employed also upon those regulating the strength of stone, iron and wooden beams; but these, the least praiseworthy sections of the old law, have been retained with nearly all their objectionable features, if not with a few additional ones. In speaking of stone lintels, for instance, both the old and the amended statute specify, without regard to the sort of material employed, that lintels over openings, whether "of stone or iron," shall be not less than eight inches in height for an opening not more than four feet in width, and twelve inches in height for openings not more than six feet in width; and so on; and lintels over openings not more than six feet in width may be of the same height, but four inches only in thickness, provided the opening is covered through the remaining thickness of the wall by a flat arch turned over a wooden lintel. It is needless to point out the absurdity of lumping stone and iron lintels together in this way, as if the materials possessed the same transverse strength; and it is hardly less absurd to specify the same dimensions for all kinds of stone. Every one knows that the transverse strength of stones varies greatly, and while an eight-inch lintel of blue-stone might safely support a wall over a four-foot opening, a similar lintel of many of the sandstones used in New York would be in constant danger of collapse. If the lintel extends only partly through the wall, and is backed by an arch, the danger of breaking it is, although the law does not recognize any difference, much greater than when the lintel is the only support; since the compression of the joints of the arch throws an intensified strain upon the unyielding lintel; and blocks of ordinary building stone of the heights and span specified, would be almost sure to give way sooner or later. The provisions for determining the sizes of wooden floor-beams, though apparently more scientific, are in reality little better than those governing the dimensions of lintels; the new rules, like the old, authorizing in set terms the use of timbers which would, according to the results of recent investigations, break under their load; while even the air of comedy which characterized the old sections on the subject has been maintained in the improved statute by the retention of the ridiculous clause providing that "in all storehouses the weight that each floor will safely sustain upon each superficial foot shall be estimated by the owner thereof, and posted in a conspicuous place on each floor thereof;" just as if any floor would "safely sustain" the same weight upon "each superficial foot;" or as if most owners of storehouses were likely to be able, even if they wished, to "estimate" the strength of their floors by any process more complicated than that of writing down the three figures which first came into their heads.

A LIVELY discussion has been going on in Texas about the stone to be used for the exterior of the new Capitol. Although, as we understand, the contractor for the building is not required by the specification to use local stone, it seems to have been taken for granted that the opportunity of displaying the resources of the State in the way of building stones should be made the most of, and as it was inconceivable that a State of such enormous size should not contain all varieties of stone, the natural inference was that the whole of the materials would be of native origin. Even the contractor appears to have had the same idea, and it was not until

investigation had shown that no stone of good and uniform color was within reach in sufficient quantity to face the walls of the building that he proposed to use Bedford limestone, from Indiana, for the external portions. The question of the use of a foreign stone was brought before the Capitol Commissioners, the majority of whom favored it, but the Governor, who has a very proper preference for granite as a material for large buildings, and, as a member of the Commission, has a right to express his preferences, opposed the conclusion of the majority in a very earnest public protest, taking the ground that although the granite hitherto obtained had not been found quite suitable, further search would undoubtedly bring to light stone enough for the building, of quality in every way unobjectionable. The State, with great liberality, has offered the contractor the labor of a thousand convicts for either one or two years, at a nominal cost, to be used in opening the granite ledges of Burnet County, and in working the stone obtained from them, and has consented to extend the time for the completion of the building as much as may be necessary for making the requisite explorations; and it is not strange that the Governor should believe that everything had been done to insure the use of Texas stone throughout the building, and should be disappointed at the reluctance of the contractor to accept the offers of the State. On the other hand, it is hardly more to be wondered at that the contractor, who probably knows more than the Governor about the uncertainties of stone quarries, and dreads to take any chances in carrying out his agreement, should prefer the certainty of obtaining an admirable stone, in any quantity and within the shortest possible time, at a certain, even if a high price, to the prospect of spending a great deal of time and money in the granite quarries, with only a chance, in the end, of securing stone enough for his wants, possessing the uniformity of color and texture, and the freedom from defects, which are so rarely found combined in granite.

AN Irrigation Commission was recently deputed by the Governments of the various Australian colonies, acting in concert, to examine the methods of irrigation in use in the United States, and report the result of their investigations for the benefit of their own countrymen. Every one knows that in many parts of the West, particularly in California and Colorado, the artificial irrigation of land is carried on in a very scientific manner, and on a large scale, millions of acres of the richest agricultural land in the world depending for their productiveness entirely upon the moisture brought from rivers many miles away, but the methods of irrigation differ greatly in various parts of the country. The system which seems, according to the *Builder*, to have made the greatest impression on the Commissioners was that which they found in use at Pasadena, a noted fruit-raising district near Los Angeles, in Southern California. The distribution of water here is carried on by a stock company, composed of the proprietors who use the water, and each share of stock, costing two hundred and fifty dollars, entitles the owner to a regular supply of water enough to keep ten acres of land in productive condition. The indirect profit on the investment is enormous, for, apart from any dividends which might be earned on the stock by disposing of surplus water to persons not connected with the company, the introduction of the water has increased the value of the land under irrigation more than a hundred-fold, while, even at present prices, the irrigated land is excellent property, the net annual return from an acre of it, when planted with orange trees, being from two hundred and fifty to five hundred dollars, after paying all expenses.

THE supply of water is limited, so that it is necessary to avoid the waste by evaporation and soakage which would take place if it were conveyed in open channels, and in place of these iron pipes are used as conduits. The construction of these pipes is, we think, quite novel, and is certainly well worth remembering. Each separate section is eight feet long, and is formed of two tubes, one within the other, made by rolling up plates of sheet-iron and soldering the joints, which are lapped an inch. The difference in diameter between the outer and inner tube is sufficient to leave a space between them, when one is placed inside the other, of one-sixteenth of an inch, and the two are put together under the surface of a bath of melted asphalt, which not only coats all the surfaces with a protecting film, but forms a continuous packing between the outer and inner tubes, preventing any possibility of leakage, and appreciably increasing the strength of the pipe.

HARPER'S WEEKLY gives an account of a system of accident insurance recently adopted by the Baltimore & Ohio Railroad Company, which is interesting, not only in itself, but as being the first to be carried out on a large scale in this country. The former president of the railroad company, Mr. John W. Garrett, who was a man of exceptional thoughtfulness as well as ability, was struck, when travelling abroad, with the value of the provisions for insuring workmen against accidents which are so commonly made by railway companies and manufacturers there, and on returning to this country he set himself at work to devise a scheme for extending similar benefits to the persons employed by the great railway company whose affairs he administered. His son, who entered warmly into his plans, assisted him in the work, and was therefore well prepared, on his succession, after the death of his father, to the presidency of the road, for the development of the good work which they had begun together. In 1880 the corporation set aside one hundred thousand dollars, as the nucleus of a fund for insuring persons employed in its service against accident, disability or death. All the employés of the company were invited to avail themselves of the advantages offered by this provision, by contributing a small monthly sum for keeping up the guarantee fund, and the subscribers were allowed to share, equally with the railway company, in the management of the insurance association and its funds, by the election of five out of the ten directors. The minimum rate of contribution was fixed at one dollar a month for men receiving thirty-five dollars a month or less as wages, increasing regularly to five dollars a month for those receiving a salary of more than one hundred dollars a month. In case of disabling accident, the men who paid a dollar a month were entitled to draw indemnity at the rate of fifty cents a day for six months, if their inability to work should continue so long, and twenty-five cents a day afterwards, until they were able to return to their tasks, or fifty cents a day for not more than a year, in case of sickness, or injury from other than accidental causes. If one in this class should die of injuries received in the company's service, his family received five hundred dollars; and in the event of his death while in the service, from any cause except accident, his family received one hundred dollars. This series of indemnities was known as a "benefit," and the regular payment of any multiple of one dollar a month entitled the contributor making such payment to a corresponding multiple of the indemnity attached to a single benefit.

AFTER a time, subscription and contribution to the insurance fund, which was at first optional with the employés of the company was made compulsory, on all entering the service, as it is in most cases abroad, and the new workmen in each class now have their contribution deducted from their wages. Each man is, however, allowed the privilege of subscribing for extra benefits if he wishes, so that men who have large families, or a little extra income, may purchase special security for them. In four years and five months, to October 1, 1884, more than seven hundred and fifty thousand dollars had been paid out in indemnities under this system. The largest single item of disbursements was on account of sickness, more than two hundred and seventy-five thousand dollars having been paid for nineteen thousand cases of natural ailments. The next item, as would perhaps be expected on a great railroad, was on account of death by accident, two hundred and one deaths having occurred, involving indemnities amounting to two hundred and seven thousand dollars, and one hundred and fifty-five thousand dollars were paid out on account of indemnities and expenses of surgical treatment for nine thousand cases of injury from accidents. Three hundred and eighty-three deaths from natural causes drew one hundred and thirteen thousand dollars out of the fund, showing that the average number of benefits held by each person is about three. At first sight, the cost of this insurance to those who enjoys its benefits seems rather unreasonably large, the premiums on both life and accident policies for the same sums in companies of the ordinary sort, for men of the average age of those entering the service of a railway company, being only about one half of the contributions required by the Baltimore and Ohio corporation; but it must be remembered that these contributions cover indemnity against sickness, which none of the ordinary insurance companies touch, and which, as it appears, absorbs more than one-third of all the money paid out, and that railroad men, on account of the dangers incident to their profession, always have to pay a much larger premium for insurance than those engaged in other occupations.

BERLIN AND NEW YORK.

BERLIN.

AS I said in a recent letter, a vast amount of building, much of it of a very ambitious kind, has lately been done in Berlin. Of course its results have been discussed from time to time in German publications; but I think they have not attracted much attention abroad, and am almost sure they have not been dwelt upon in these columns. I wish very sincerely that some professional correspondent of the *American Architect* were here to write of them in my stead; no one being better aware than I that it is, to say the least, a little reckless for a mere layman to speak of architecture to a professional audience, and especially of contemporary architecture, where he cannot often fall back for guidance and support on the dicta of printed authorities. But Berlin lies so far outside the usual track of the travelling student that I hardly imagine any well-trained observer is likely just now to be looking about him here with the intent to take notes and "mayhap to print 'em" in these columns. And even should such be the case, he certainly will not find his work forestalled by my remarks, which shall be strictly and conscientiously superficial; I having no faintest desire to do more than show how, to a mere interested outsider, the current results of architecture here seem to compare with its current results at home.

Die Dankeskirche, Berlin.

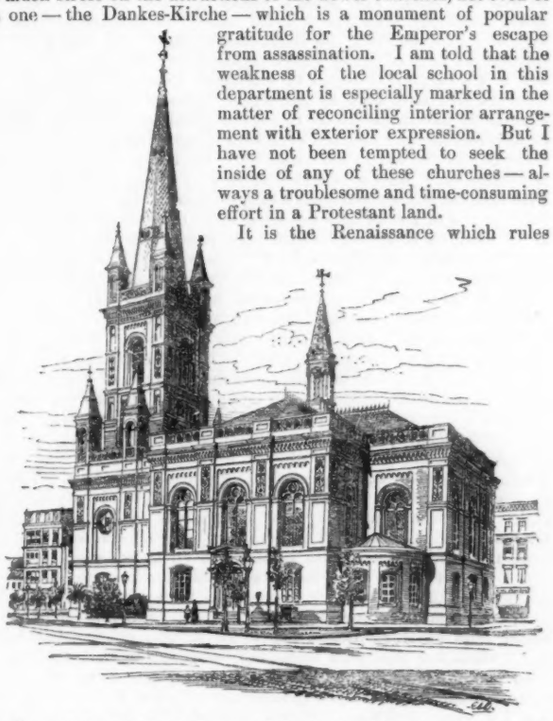
As every one knows, there is nothing in the older architecture of Berlin that is first-rate; very little that is even second-rate in quality. There are two or three rather unimportant mediæval churches, and one wing of the palace dates from the sixteenth century, but all else is *baroque* or modern. The secular work of the last century is only pretty good — not half so interesting as that in Dresden or Vienna — while the churches are conspicuously ugly. I will only note as a curiosity that standing free in the Gendarmen Markt, with the theatre between them, one sees a pair of churches, built by Frederic the Great, which are absolutely identical, an architectural inspiration that I do not remember to have seen elsewhere incorporated, and that certainly does not strike one as felicitous.

The Classic style which everywhere came in with this century found here a good exponent in Schinkel. His Schauspielhaus (the Royal Theatre, not the Opera-House) is an excellent example of what can be done with Greek, or more truly by Grecicizing, forms kept free from all Roman intermixture. And his Old Museum is effective and grandiose outside, though within it was as badly planned, both for monumental beauty and for its special purpose as one could well imagine. Owing to Schinkel's enormous influence, and still more, perhaps, to the taste of Frederic William the Fourth, the Classic fashion persisted in Berlin long after all the rest of Germany had been swept into the current of the "national-romantic" movement. Its hold was finally broken only about fifteen years ago, when the present period of great activity began. On the whole, contemporary architects have had almost as good a field here as they have with us. That is to say, if a field is good in proportion as it is open, free from those noble relics of a great period which set an uncomfortably high standard, and to a certain extent mark out the path modern men must take to reach it.

It may be said in general of Berlin, both old and new, that it is a city without visible roofs, to a degree almost ifnot quite unparalleled in Northern Europe. Nowhere in secular work that is not strictly recent do we see the sign of a roof, save only in the oldest wing of the palace; and even in the recent work the same state of things largely prevails. Among the new shops and apartment-houses one sees, indeed, certain visibly-roofed examples with French mansards or German dormers. And in the villa quarters steep little roofs are getting to be somewhat frequent. But the general aspect of the town is not yet perceptibly modified, and the traditional rule of no roofs has hardly been broken through, I think, in a single one of the many great public structures and private palaces of to-day. This absence of roofs seems doubly strange and doubly unwelcome if one happens to have come from Dresden, where, though the roof is somewhat subordinated in current work, it forms the chief feature in all work that antedates this century — where the oldest streets are crowned with a steep, picturesque mass of red-brown tiles, and the *baroque* buildings offer as charming a series of studies in the use of hipped roofs, often with curved profiles and overhanging eaves, as one could wish to see. Indeed, wherever one may come from, the roofiessness of Berlin strikes one as a disagreeable anomaly in this degree of latitude.

I may add that until within the last few years Berlin was also chiefly a city of stucco. Stone was not a local product, and was dispensed with even on occasions where one might think cost would have been no object, while the example of that beautiful old brick architecture which is the only glory of the Brandenburg Mark was utterly ignored and burnt clay was held fit only to be concealed by plaster. Even now in ordinary structures plaster still rules and stone is a rather rare alternative; but with the growth of wealth and ambition it is winning its way, and stucco has been banished at least from monumental work. Here side by side with a constant use of a pale yellow sandstone, and a more than occasional use of marble and granite, we find a brick Renaissance well under way, and it constitutes, I think, the most interesting because the most individual local feature.

Since I have said that roofs are so exceptional, it will be understood that no favor is shown to Gothic or even to the most characteristically northern early Renaissance forms. Mediæval precedents are consulted only in ecclesiastical work, and in this itself we seldom find even an approach to a thorough-going mediævalism. The general superficial effect of a Gothic church seems to be thought desirable; but round arches are almost invariably used just now, and are never treated in a genuine Romanesque way. When the forms and details are not Renaissance they are "Byzantine," after the fashion of Munich in the last generation. The most amiable of tourists could not say that ecclesiastical work is a strong point with the Berlin school; the most patriotic of critics acknowledges weakness here, and even the most self-satisfied of critics tacitly confesses it. For no one, from the writer of one's guide-book to the driver of one's cab, lays much stress on the attractions of the newer churches, not even of that one — the Dankes-Kirche — which is a monument of popular gratitude for the Emperor's escape from assassination. I am told that the weakness of the local school in this department is especially marked in the matter of reconciling interior arrangement with exterior expression. But I have not been tempted to seek the inside of any of these churches — always a troublesome and time-consuming effort in a Protestant land.



It is the Renaissance which rules unchallenged in Berlin to-day; chiefly in its later forms and until very lately only in its Italian varieties. Richard Lucæ, who at first followed Schinkel's Classical lead, but was afterwards much influenced by Semper's work in more Southern cities, may be named as the pioneer in the Renaissance movement generally, and as the father of its Italianizing branch. To him and to Hitzig are due the first of a long series of public buildings and sumptuous private hotels or "palaces," which are often very excellent examples of one or another of the late Italian types. But as we have similar examples everywhere with us on the Continent, we do not stop to study them here; and still less do we pause over those other palaces which now occasionally show the influence of modern Paris. In both types the sculptor often contributes very largely of his art, but rather to the increase of general sumptuousness than to that of definite artistic charm. And the same must be said of the vivid color-work in paint or mosaic which now is sometimes being added, either on the walls of loggias or in the upper panels of the façades themselves. The Germans of the North are proverbially not colorists *de race*, and one feels — theoretically and from the evidence of these essays, which are sometimes due to their most accomplished painters — that only those who are colorists by nature can succeed in the difficult task of using external figure-paintings on a conspicuous scale as to size, and on the most pronounced and varied scale as to color. A Giorgione could succeed, perhaps a Makart could have succeeded; but to my eyes Professor Werner and his fellows fall a good deal below the mark

that one's imagination is fain to set. And when the same experiment is tried under worse conditions, as sometimes on great public caravansaries and commercial structures, the result is certainly showy enough, but artistically the reverse of inspiriting.

The long new streets of ordinary dwelling-houses (apartment-houses, that is to say, though not in our towering acceptation of the term) are varied by all sorts of essays, from that utilitarian plainness which in Germany is dubbed the "barrack style" to that self-conscious and ponderous elaboration which is so often the result when an average Teuton in any profession tries to be ornate and playful. Modern Paris and Vienna are often copied, but hardly so as to preclude the necessity for studying their ideas at home. The most interesting and the best examples are those, I should say, which have a more German-Renaissance accent, and which hold a middle course between barrenness and ornamental excess; and some of these are very good indeed.

Among the smaller detached dwellings, again — the villas around the Park and in the outlying quarters—time-worn Italian and French modes vie with those of a more "national" character. A modified châlet type is conspicuous, and has brought in the steep roofs of which I spoke. But here there seems to me very little that is interesting: a dead level of work that is rarely bad or unaccomplished, but never, I should say, really beautiful or really suggestive; and, after all, the domestic problems of Berlin are so very different from those of American towns that we should not get much practical help here, even did all examples show the distinctest excellence.

In many streets the shops are of course but a subordinate feature of the apartment-houses; but in others of a more distinctly commercial character we see in fullest force that tendency toward loud display, that desire to be conspicuous at all hazards which we have known so well at home. The general effect of these streets is certainly more imposing than the general effect of similar streets with us. But I do not think the difference springs from any great preponderance here of really better architectural elements. Part of it, and it is a very great degree of difference, as may be guessed, comes from the fact that here an important business street is very wide, beautifully paved, extremely clean, not wholly deformed by rampant signboards, and not hatched over with telegraph-wires. Then everything is brought up to the same high level of — shall I say pretentiousness, while with us pretentious is very apt to stand side by side with humble, shabby and sordid insignificance. But in itself the pretentiousness of Berlin does not seem to me of a quality we need envy. If we examine it in detail we find that it has, indeed, a more "scholarly" character than has been the rule with us, in so far that some recognized style or fashion is the starting-point, or that a mild eclecticism is based upon the elements of such styles. There is none of the crude originality, none of the aberrant inventiveness, none of the bold, fantastic wilfulness which we see expressed, I will say, in the central portion of Broadway, and which were encouraged partly by the free and independent (and ignorant) nature of the American soul, and partly, doubtless, by our more general use of iron. But the result is hardly better, either for true architectural excellence or for superficial beauty; while even hideous originality has perhaps a certain sort of interest that is wanting to unbeautiful conventionality. The general effect is, I repeat, distinctly loud and vulgar. There is an almost entire lack of fundamental architectural ideas, an almost entire dependence upon applied decoration, and a very marked tendency in this decoration to confound profuseness with effectiveness, and over-emphasis with beauty. Even as we stood ten years ago I do not think we need have greatly envied the commercial architecture of Berlin, while as we stand to-day such envy would be most misplaced; for our latest efforts in this branch seem to me far better than anything Berlin has to show, very often better in the spirit which has prompted them, and sometimes much better, also, in their actual concrete presence. The problems here are easier; there is neither the cramped ground-plan of New York, for instance, nor the same tendency towards immoderate height to contend against. And yet, with a greater freedom and freshness of feeling, we also display — unless, indeed, I have no eyes to see — a much more earnest effort to grasp the properly architectural side of the art, a stronger impulse toward structural composition, and a distincter desire to subordinate ornamentation to this. There is with us a rapidly-growing reaction against superficiality of treatment and also against loudness and ostentation. But I see no signs of either in the commercial work of Berlin; I should be inclined to say, on the contrary, that for rampant showiness nothing could ever have been done anywhere in the world to exceed the great new Kaiser Gallerie, with its openings on two principal streets, or than a certain structure of orange-colored brick, with profuse light stone trimmings, that has recently made itself conspicuous on the Unter den Linden.

Doubtless among all the new buildings in the lower part of New York there is not one without its imperfections; and yet there are very many which I am sure every impartial judge would find architecturally better than anything of a similar character here — architecturally better in the motive which has ruled their design, and also more satisfactory to the eye. And it would be ridiculous even to attempt a comparison with such an example as, for instance, the Ames stores in Boston. Of course these of our buildings to which I now refer are still exceptional; but they are increasing in numbers so rapidly that they seem to point to a future rule, and in the commercial work of Berlin we do not find even exceptions of the sort. The only works that even in aim seem to me really good, really architectural, are some of the bank buildings, and these more properly belong to the class I have already named as including the private palaces, since they usually stand outside the main business thoroughfares and follow rich palatial forms, have no great height and are discreetly aristocratic and non-commercial in expression. I have, it is true, seen one shop-front which is interesting and charming, and doubly so because of its entire unlikeness to all else about it: a narrow front which follows a good old German fashion by having the openings of all its upper stories grouped into a square central bay, and its shop-window a real window under a great arch, instead of a mere screen of glass. But this is the only attractive or instructive item I have noted in the great business streets of the town.

The recent revival of brick constitutes, as I have said, the most individual feature in current work. In commercial and domestic structures either a red or a vividly yellow variety is now often used as the groundwork for an ornamentation in stone so lavish that its essential qualities almost disappear, except its quality of color, which is apt to come into spotty and discordant prominence. Rather oddly, it is to the series of new public buildings we must look for its simplest and most straightforward treatment.

Schinkel may be said to have started the brick Renaissance with his Bau Akademie in 1837, though the building was exceptional as regarded his own practice (his other brick essays having been rather unsuccessful Gothic churches), and was without immediate practical influence upon the profession. But it was long and widely discussed, and has had a numerous late-coming progeny in our own times. If I am not mistaken, it is illustrated in Fergusson's "*Modern Architecture;*" but it looks better, I find, on paper than in the body. For, given the necessity, supposed or actual, for a right-lined, four-square ground plan, its design is attractive and appropriate, while its treatment strikes one as thin and poor; the basement not pronounced enough, the angles not solid enough, the buttresses too shallow, the cornice too feeble, the decoration too small in scale and too meagrely mechanical in finish.

The first conspicuous effort again to bring brick into favor was made by Waesemann in his Rath Haus, finished in 1870, which even local patriots acknowledge to be one of the most colossal architectural failures of an age which is pretty rich in such. Certainly nothing more unscholarly in conception ever arose even on American soil. The artist seems to have tried to preserve an Italian flavor, while basing his work on the great mediæval and Renaissance town-halls of the North. The enormous length of his main façade is broken by pavilions at the angles and in the centre, but they are so small on plan and so shallow in projection that they do not really mitigate the effect of dreary monotony. Above the basement there rises an unbroken succession of very tall, round-headed openings, which, from the evidence of their heavy transoms, seem to light two stories within. But we find to our surprise that for the most part they open with their whole height into very large and lofty apartments. There is no visible roof and but a weak cornice, and the square tower with open angle-turrets, which rises from behind the centre of the façade, is as ugly and wire-drawn in design as it is utterly unconnected with the mass below. The main portion of the structure is red brick, harsh in color and unmitigated in tone, and, since the mass is so devoid of modelling, unrelieved by any effective shadows. The light granite used for the basement and certain parts of the decoration is in rather glaring contrast, and the dark sandstone which is employed only and solely to form the transoms and mullions of the tall windows, having its existence nowhere else suggested, naturally appears to be wood or iron. Inside, too, the building is a total failure, only half-lighted, and very badly planned both for grandeur of effect and for practical convenience. Even the one redeeming point which local critics note in the Rath Haus would hardly strike a foreigner as such — the technical treatment of its brickwork and of its lavishly applied though quite undecorative decoration. This last, partly in stone and partly in terra-cotta, is everywhere designed with the utmost care and academic correctness; but it is very small and ineffective in scale, badly disposed, and very mechanical (at least the terra-cotta) in execution.

The Rath Haus remains an isolated and uncharacteristic example of local work, if we regard its general aspect, its style or no style. But it is locally characteristic if we regard its technique, so to say. The very many recent brick public buildings are all alike in this, that mechanical exactness seems to have been held equivalent to artistic beauty, and that terra-cotta ornament is very freely used, but is very small and ineffective in scale, very flat in relief and very metallic in execution. A four-square, right-lined ground plan is almost invariable; indeed, so far as I have seen, quite invariable in this class of structure. The inspiration as to style comes from north Italy, not, as one might have predicted, from north Germany or Holland. Round arches are universal and their forms are often boldly and effectively modelled, showing, in this point at least, an advance since the days of the Bau Akademie and of the Rath Haus. The proportions of voids to solids is doubtless, of necessity, greater than in Italian brick construction of a similar sort; but there is no attempt to restore the broad, open fields of wall so essential to the material, by any grouping of the windows. Indeed, composition is still the great thing lacking, both in the treatment of the main masses, and in the disposition of wall spaces and openings. The general effect is totally different from that of the loud and showy commercial buildings I have noted; but the same neglect of strictly architectural — that is, constructive beauty, underlies them both. And in consequence

we find, though of course in a very different and infinitely less offensive fashion, the same tendency to the over-use of ornament. Such plain wall spaces as are left are in reality not left, are as much broken up and "enlivened" as possible. In the lower story of the new part of the General Staff Office, for example, there are wide, solid stretches (the only ones in the building) between the windows; but they are lined with horizontal rows of tiny, finikin, tin-like terra-cotta rosettes, until all effect of breadth and strength is lost. The mouldings of the great round-arched windows above are very lavishly embroidered with very scholarly, very pretty, but quite conventional designs of arabesques and figures, wherein, once more, the scale is so small, the relief so flat, and the finish so mechanical that neither by perceptible beauty of line nor by perceptible contrast of light and shadow, do they add a note of really decorative charm.

M. G. VAN RENSSELAER.

THE OLDEST CHURCH IN LONDON.

THE following letter has been addressed to the editor of the New York *Evening Post*:—

Sir, the relation between our nationalities is now so close and so intimate, that an Englishman — especially an English clergyman — feels little or no compunction in asking help of his cousins across the Atlantic for any object which is in any sense of national interest. I therefore beg permission to ask through the medium of your columns for help to restore the oldest church in the city of London, viz.: the Priory Church of St. Bartholomew the Great, West Smithfield. This church was founded in the reign of Henry I., A. D. 1103, by Rahere, founder also of the adjacent Hospital of St Bartholomew. Much of the original building is still standing, and is used for public worship. But apart from the unique and impressive character of the architecture — a beautiful specimen of early Anglo-Norman style — the church and parish possess singular historic interest for Americans and Englishmen. The founder of Emmanuel College, Cambridge — the father of Harvard University — Walter Mildmay, is buried within our walls. Milton lived for some years in our parish. Hogarth was baptized in our font. Benjamin Franklin had his printing-press in our close. Washington Irving lived hard by in Little Britain, and has written one of his most charming descriptions upon its inhabitants. All these great men have doubtless many times worshipped within our walls. The martyrs of Smithfield suffered within twenty yards of our gates on a spot which was originally within our precincts. These associations are precious to all of us, and there is many another page of history upon which our records throw light.

Saint Bartholomew's Church is well-known and keenly appreciated by many American visitors, and I am persuaded it only requires that our purpose should be made clear, to call forth a kindly sympathy and a hearty coöperation from America. A committee has been formed, with the Archbishop of Canterbury and the Bishop of London at its head, to try and buy back the old consecrated sites from secular usage, and to restore the fabric in a maner worthy its history. The ancient lady-chapel is used as a fringe factory, the north transept as a shoeing-forge, the north triforium as a school, while in many places the roof is so faulty and insecure as to let in rain.

A large sum — £20,000 — is necessary to carry out our object; but we are most anxious to raise £7,500 at once to purchase the ancient lady-chapel and the north transept. If this sum is not raised within the present summer, there is a fear that these ancient sites may come to the hammer and be lost to the church forever.

Any help toward these objects will be gratefully received and acknowledged by me. Remittances made to Messrs. Brown, Shipley & Co., Founders Court, Lothbury, or to the Rev. Arthur Lawrence, the rectory, Stockbridge, Mass., would also be kindly accepted by them.

Asking your good offices in this matter, I am, sir, your obedient servant,

W. PANCKRIDGE, Rector.

THE VESTRY, ST. BARTHOLOMEW THE GREAT,
WEST SMITHFIELD, June 25.

MARMORINE, A SUBSTITUTE FOR MARBLE. — Mr. Bruce Joy, an English sculptor, has invented a new material for statuary which he calls marmorine. It is said to be as beautiful as marble, and scarcely distinguishable from some tints of Carrara marble, yet much cheaper than marble, and having the advantage of limitless production from an original. Though cheaper than marble, it is still costly, which will prevent its being used in inferior forms of art. Though something like plaster-of-Paris, it is so hard that it may be worked upon precisely the same as marble. — *Exchange.*

SOME CATHEDRALS OF SCANDINAVIA.

THE northernmost and unquestionably the finest of Scandinavian churches stands at Throndhjem, in Norway, the highest point to which a railway attains in Europe. It is a vast edifice now undergoing restoration, but has hardly yet emerged from a state of ruin. Here the Norwegian sovereigns are crowned, and here at one time the Assembly used to meet on occasions of national importance; but scaffolding and sustaining walls still occupy much of the great Church of St. Olaf, and make it useless at present to invite anybody's company to so remote a region. Let us, then, pause at Upsala on the way thither from Stockholm.

Upsala can be reached by land or by water from the Swedish capital. The railway journey occupies a little over two hours, and the steamer is about twice as long in doing the distance; but the land route is intolerably wearisome, through endless and dreary pine-woods, while the water journey is pleasant and picturesque, affording, as it does, peeps at the shrunken ruins of Ligtuna and the imposing square château at Skokloster. The old University city itself stands on both sides of a narrow, muddy stream, called the Fyrisa, into which the steamer very slowly and not without considerable difficulty makes its way from an inlet of Lake Mälaren, and the paddle-wheels churn up the clayey soil at the bottom as we pass under a very hideous red building called locally the Slott, or Castle, and bring-to at the quay of Upsala, beyond which point the winding little river ceases to be navigable at all. The most prominent building here is the cathedral — a strictly Gothic structure in red brick, with occasional inlaid patterns of white stone, of which the speckled effect is by no means an improvement. The exterior is in other respects very plain, there being little in the row of lateral chapels to break the line of the aisles, — indeed the effect produced is rather as of a double aisle — the transept being shallow, and the two western towers not sufficiently high to impress the imagination. The architects of the period were not such masters of their craft as the mediæval builders at Lübeck and Nuremberg, in whose hands we learn of what brick is capable, and the only ornament to be discovered at Upsala is on the elaborate and pleasing portals north and south. Inside, the church is at first sight very disappointing, owing to the bare condition of its white-washed walls and roof, and the absence of all colored glass; but when we have somewhat got over this feeling we cannot choose but admire the proportions, which are really very striking. Twenty-four columns support the nave and choir — a total length of nearly four hundred feet — and the capitals of these columns, whose quaintly-conceived animal-forms are carved in the highest relief, are most curious. Some massive candelabra, and the pulpit, a top-heavy wooden erection, covered with paint and tawdry gilding, complete the decoration of the nave; but a valuable sarcophagus conceals the bones of the sainted King Erik, and two memorial chapels enclose monuments of historic and artistic interest which might not improbably be better appreciated by foreign visitors if the sacristan's knowledge of languages was not confined to Swedish. In one of these, under a vaulted and staring canopy of blue, dotted with golden stars, reposes Gustavus Vasa; in the other the fine Italian tomb of John III is placed. More interesting than either, in a small side chapel across the nave, with no wretched modern frescoes to grieve the eye, and no false and unseemly ornament to detract from the dignity of death, rises an obelisk of porphyry, on which a medallion exhibits the lineaments of the greatest Swede of later days, Linnæus, who is buried beneath the nave. The treasury contains a large amount of rubbish, and a certain banner — said to have been made by an early queen out of her petticoat, and sent in derision to a German potentate, who had scoffed at her warlike propensities — of which the natives are very proud: we were unfortunately unable to discover it among the mass of old vestments and relics deposited there.

At one time three lofty towers, four hundred feet high, gave grandeur to Upsala Cathedral; but the ravages of a fire in 1702 destroyed them, and the central tower has never been rebuilt. The two that now flank the front have only been carried up one hundred and eighty feet high, just double the height of the choir, and their effect cannot be compared with those at Lund in South Sweden, which, owing to the wide extent of the flat plain that encircles the city, can be seen from an immense distance, and have scarcely faded out of sight of the Danish steamboat when it reaches Copenhagen from Malmö, a site well chosen for what was once the metropolitan church of Scandinavia, though Denmark has now its own archbishopric, and the primacy of Sweden has been shifted to Upsala.

Lund is a fairly lively little town not far from the southern extremity of Sweden, and the seat of one of the Universities of the country. In the sixteenth century its population was nearly twenty times what it can boast now-a-days, for including students the total is under fifteen thousand; but the town has shrunk with the population, and we do not see ruined walls or crumbling buildings around to remind us of the changes that have befallen it. Its glory is the Cathedral, a small but very pleasing Romanesque building, nearly one hundred feet

shorter in length than the Upsala church; but, owing to the difference in level between the nave and transepts, and the perspective through the double row of columns, the impression upon the mind is as of a much larger edifice. The east end has a circular apse, and beneath this is a vast crypt, resting on twenty-four pillars, which is carried for a length of one hundred and twenty feet or so under the raised portion of the Cathedral; and here are quaint old stone figures, strange brasses, and forgotten tombstones to be seen when the sun streams down from the open doorway above, or through some of the lateral chinks, which on a dull day can scarcely do more than make the darkness visible. The vaulting of the Cathedral throughout is elaborately painted in blue and gold; and, though the result is somewhat glaring at present while the color is being renewed, it will doubtless harmonize in years to come well enough with the walls: and at any rate, this coloring is preferable to the depressing whitewash which appals the visitor to Upsala. There is much to note with pleasure and surprise in this little Cathedral. In one place we see some curious winged lions, supporting on their backs angels in the act of unfolding their pinions to fly away, and, damaged as the stonework is, there is much spirit in the sculpture left. In another we find great brass candelabra surmounted by saintly figures, which also rest on small lions, and above there are raised slender columns to support deeply-cut rounded arches sunk in the thickness of the walls. Again, the carving of the wooden choir-stalls is delightful. It represents the chase of a nondescript animal, half bear, half beaver, who is alternately hunter and hunted, and on one stall is being dragged from his den by the tail, while a little further on a larger specimen of the beast is satisfactorily munching his human adversary. But the lover of architecture will probably be most interested in noticing the extreme diversity in form and ornament of the solid pillars that bear the crypt; their capitals, now plain, now richly sculptured; the little figures that crawl up one; the very unusual double-rope marking of another; and the deep indentation that is carried from base to capital of a third; and all supply a fitting framework for the strange medley of tombs, fragments of stone and iron work, to be found gathered together below and around them.

The growing seaport of Malmö is but a few miles from Lund. This town possesses several large brick churches whose proportions are good enough, but spoiled as usual, inside, by dreary whitewash; yet, in spite of the importance of the place, none of these rises to the dignity of a cathedral, and the first to be seen worthy of note on the way southwards after leaving Lund is the royal burial-place of Roeskilde in Denmark, for the great Frauenkirche of Copenhagen is only redeemed — though nobly — from ugly insignificance by the masterpieces of Thorwaldsen that adorn it without and within.

Roeskilde is about seventeen miles distant from Copenhagen; a journey that the railway contrives to accomplish in something under an hour-and-a-half. It is a dreary town enough; but the situation is pretty, as it lies in a grassy plain at the head of the inlet of the North Sea, and a gradual rise from every side culminates in a plateau on which the Cathedral stands, so that without being on a height in any fair sense of the word, its slight elevation makes it visible for a long distance. The Cathedral is a very small building, first consecrated in 1084, at a time when the rounded arch had not yet made way for the pointed variety; but, as repeated conflagrations destroyed portions of the edifice, the ruins were rebuilt in the newer style. The transepts do not project at all from the body of the church, and the aisle on either side the nave is carried around the choir. Hence the whole building presents a rather monotonous appearance when seen from the outside, which, moreover, suffers from the presence of a pigmy pinnacle or so in place of any spire or tower, and from the new pointing to its old brick surface applied during a recent restoration. Inside along the southern aisle is a row of chapels containing huge sarcophagi in black and silver, and tasteless monuments where repose the past Kings of Denmark. The effect of these is overwhelmingly dismal. The chapels are scarcely in harmony with the original design, though here and there a good individual detail is noticeable, such as the vaulting springing from a central shafted column, or the cupola that caps a dome elsewhere. In one may be noticed some old frescoes that might have been interesting had they not been ruined by successive layers of whitewash or injudicious renovation. The largest of these chapels contains the tomb of Christian IV with his wife by his side; and he, almost alone among the sovereigns of the little Northern Kingdom, seems to have merited much posthumous honor by his wisdom in counsel as well as his bravery in war. He befriended art in all its forms, and most of the best architectural work in the country dates from his time; nor did he, like too many of those who preceded and succeeded him on the Danish throne, waste the finances of his kingdom on useless frivolities, or in gratifying the whims of worthless favorites. Yet others may be lying here whose memory should be rescued from oblivion, as underneath the upper choir — for at Roeskilde there is a division of the choir, and one portion is raised above the surface of the other — lie buried many of the early kings and magnates of the land, whose names are at this time little but a myth at home, and are altogether unknown abroad. The choir is enclosed by a very handsome old brass railing, and there is some fine carving on the altar itself, and upon the choir-stalls. But, on the whole, a pilgrimage to Roeskilde cannot be said to have the same interest, except for the specialist in Danish history, as the journey up the lovely arm of Lake Mälaren to Upsala, or groping in the semi-darkness of the grand old crypt at Lund.

The town is absolutely without interest; it is also without what hungry visitors would much desire to find in it — a good restaurant. The railway, too, seems to crawl back to Copenhagen more slowly than it comes from it, but as soon as one reaches the pleasant Danish capital equanimity is speedily restored. — *The Saturday Review.*

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

SKETCHES IN WETHERSFIELD, CONN. BY MELVIN P. HAPGOOD, ARCHITECT, HARTFORD, CONN.

WETHERSFIELD is a quiet but handsome village four miles from Hartford, on the banks of the Connecticut River, and much of the fertile land is occupied by seed-gardens, whose products — in small parcels — have found their way over the whole world. There is a tradition that the Wethersfield church was largely paid for by a special sale of onions, and certainly this odorous vegetable has greatly contributed to the wealth of the community. In 1838 the floor of the church was lifted to give space for furnaces in the cellar, and the high pulpit and the box-pews were removed. The wainscoting of the latter served for more than forty years as a fence for a neighboring estate, and the long line of bevelled panels had a very handsome effect. In 1883 a new chancel was built to contain the organ, and the south gallery, which had formerly upheld it, was removed. The side galleries were lowered, and all the wood-work in the lower part of the church was put into quartered oak. The floor was inclined down towards the new pulpit and the new oak pews arranged semicircularly. A series of long stained-glass windows took the place of the two stories of short windows, and as the old sills were near the floor, in consequence of the elevation of 1838, carved stone panels were inserted on the outside to raise the new sills to the height of the wainscoting. This, with the south porch, makes the only external change from its appearance in 1761. The middle cornice of the auditorium, marking the ledge in the old wall, with the Ionic pilasters above, supporting the ceiling-beams, are painted ivory color, and the wall spaces between, including window splays, are saffron, with *fleurs-de-lis* in dull copper bronze. The ceiling panels are in neutral blue, with an ochre border, relieved with a Greek fret in ivory. The organ-loft is painted Indian red, with an anthemion border around the ceiling. The lower part of the walls is in deep olive, harmonizing admirably with the oak, and just above the wainscot is a broad band of dull gold. The vestibules are painted Indian red, with brownish-ochre ceilings; ivory cornices. The stained-glass, which, as well as the frescoing, was designed by the architect, has its principal field of blended tones of amber and yellowish olive, with some bands of deep red. In the upper sections, Scriptural texts are in yellow enamel on neutral blue grounds, with the surrounding rays in yellow and brown. The upper circles are cut-glass "sun-bursts" with a border of amber jewels. To harmonize with surrounding structures, nearly all of which are white, with green blinds, the steeple, cornices, and all other salient features are painted white, with the wall-surface pale sage-green, and the sashes, both inside and out, dark bronze-green, and the effect of the whole is very pleasing. Formerly the walls were lead-color, with chocolate trimmings, but the dark color greatly obscured the delicate mouldings and carving of the upper surfaces, and the bluish lead-color clashed with the greensward and the elms.

PALAZZO LOREDAN, OR VENDRAMIN-CALERGI, VENICE.

This palace was built for the Doge Andrea Loredano, about the year 1481, perhaps by one of the Lombardi. Sansovino esteemed it among the four most magnificent palaces in Venice, being covered with Greek marbles, and having its large windows decorated with Corinthian colnmns. Though built by a Loredan, it was more popularly known as "*palazzo del non nobis*" (the palace of the not to us), because of the inscription: "*Non nobis Domine, non nobis,*" engraved along its basement. Another inscription may be read on the small tablets decorating the jambs of the central water-entrance: "*Domus pacis.*" This palace, the best that the Venetian architecture of the Renaissance can boast of, like the glorious sea-front of the Gothic Ducal Palace, has its origin enveloped in mystery. This unnecessary uncertainty would seem to show that the world would rather subject itself to the imputation of forgetfulness than lavish too much praise on any individual. For this reason it prefers to attribute many works of art to the age which produced them. The conclusion, though it might appear unjust for narrow judges, would stand the test of philosophical principles. Even those who are best disposed to believe in a personal Homer must agree that what places his poems at the head of ancient poetry came from Homer's surroundings, and that the poet himself was the child of his age.

G. Boni.

TOWN-HALL, WARE, MASS. MESSRS. HARTWELL & RICHARDSON, ARCHITECTS, BOSTON, MASS.

The building is to contain in its principal story, a hall seating 700, with gallery, ante-rooms and stage, with stage dressing-rooms in the half-story below. In the basement are rooms for town officers with vault, police department with cells, and a district court-room; the court-room and larger offices can be thrown together, and used as a

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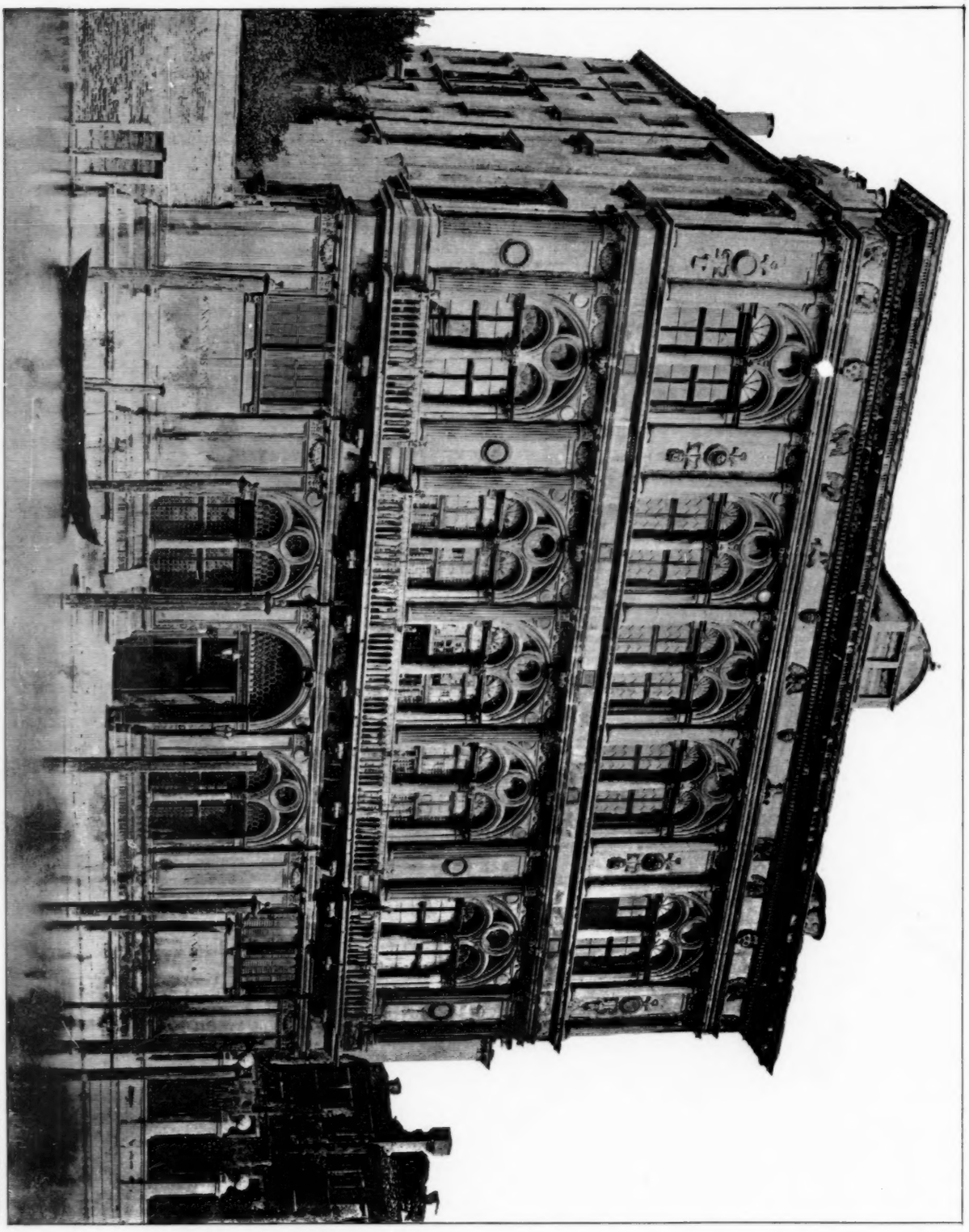

Loredan Palace, Venice, Italy

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Residence of A. Newbold Morris, Esq., at Ridgefield, Conn.

Charles A. Gifford, Architect, No. 764 Broad St. Newark, N. J.

HELIOTYPE PRINTING CO BOSTON

American Architect and Building News, July 13 1885 No. 499

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New Public Hall
FOR THE
Town of Ware
Mass.

H.W. Hartwell & Wm. C. Richardson
Architects:
No. 68 Devonshire St.
Boston Mass.

HELIOTYPE PRINTING CO. BOSTON

NEW HOLLIS ST. CHURCH, B[illegible]

GEORGE F. MEACHAM, ARCH'T.

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NEW HOLLIS ST. CHURCH, BOSTON, MASS.

GEORGE F. MEACHAM, ARCHT.

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Sketches about WETHERSFIELD CONN.

by M.P. HAPGOOD.

FIRST ECCL. SOCIETY'S CHURCH. WEST SIDE OF SOUTH PORCH. (NEW)

THE OLD PULPIT

First Church Built	A.D. 1645
Second Church Built	1665
Third Church Built	1761
Alterations Made	1838
Remodeled.	1882

SKETCH OF CORNICE.

MISS SHEPHERD'S HOUSE. A.D. 1820

OAK TABLET OVER SOUTH ENTRANCE

FIRST ECCLESIASTICAL SOCIETY'S CHURCH. (BEFORE ALTERATIONS) VIEW FROM S.W.

STAIRCASE - ROBINSON HOUSE. CHERRY BALUSTERS 3 TO EACH TREAD

BELFRY OF TOWN HALL

THE TOWN HALL

CEILING OF VERANDA

CORNER STONE OF CHURCH

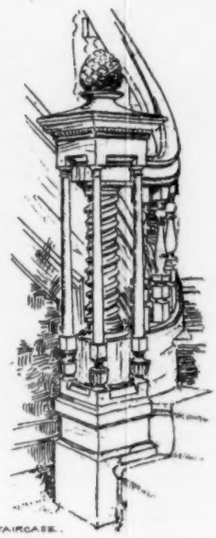
MAY. Ye 6 1761

J. R. OSGOOD & Co

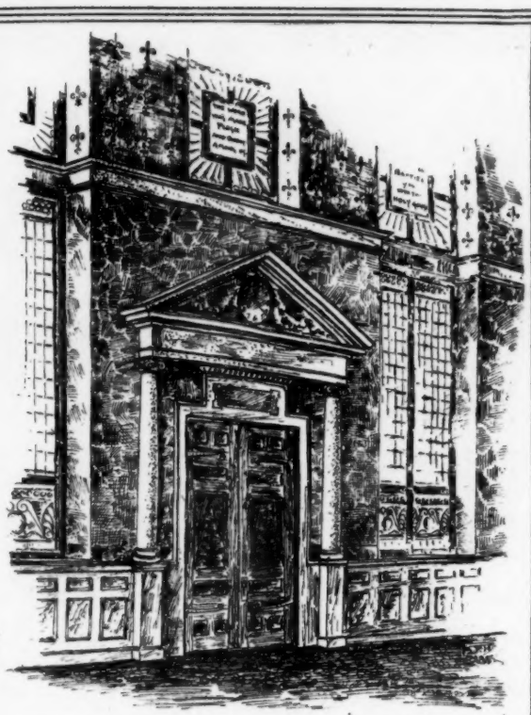
FIRST ECCL. SOC. CHURCH.

EAST STAIRCASE. (UNCHANGED)

STEPS OF BROWNSTONE.

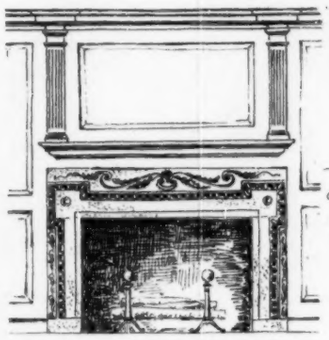


TOWER STAIRCASE. (NEW.) IN OAK



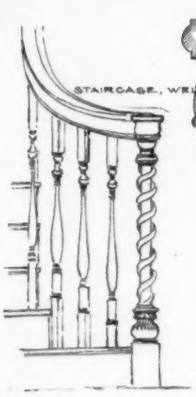
FIRST ECCL. SOC. CHURCH, SOUTH ENTRANCE. (AS REMODELLED - 1882.) INTERIOR VIEW.

ELFRY OF TOWN HALL



OLD BROWNSTONE FIREPLACE IN THE ROBINSON HOUSE. A.D. 1767

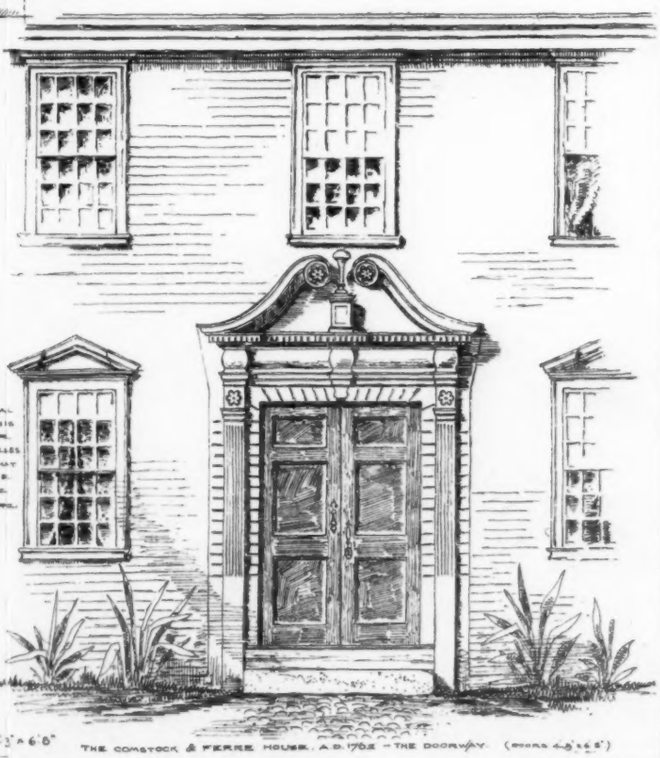
THE WELLES PLACE. ERECTED A.D. 1752 WASHINGTON'S HEADQUARTERS.



SECTION OF HAND-RAIL

STAIRCASE, WELLES PLACE

NOTE. THE GENERAL APPEARANCE OF THIS HOUSE IS SIMILAR TO THAT OF THE WELLES PLACE. EXCEPT THAT THIS HAS ONLY ONE CHIMNEY A LARGE ONE IN THE CENTRE.



THE WELLES PLACE DOORWAY.

SCALE 4'-3" A 6'-0"

THE COMSTOCK & FERRE HOUSE. A.D. 1702 - THE DOORWAY. (SCALE 4'-3" A 6'-0")

HELIOTYPE PRINTING CO. BOSTON

supper-room. The walls of the building are to be of brick, with Longmeadow stone trimming. The main hall is to show an open timber roof.

HOUSE FOR A. NEWBOLD MORRIS, ESQ., RIDGEFIELD, CONN. MR. CHARLES A. GIFFORD, ARCHITECT, NEWARK, N. J.

THIS house was built at a cost of about $17,000. The first floor is finished in hard-woods; hall and staircase in quartered oak, Elizabethan style; parlor in white and gold, Colonial style. The foundation is built of cobble and field stones laid in cement, the natural surface, moss, vegetation, etc., on the stones being disturbed as little as possible. It was required to keep the room used as bedroom on first story quiet, yet ready of access from indoors and out, hence the arrangement of passages in the plan. The plumbing is first-class, and is arranged in a vertical line for the different stories. The shingles are left unpainted in all cases, to color with age. The situation is on a ridge, about 1,000 feet above tide, commanding views in every direction.

THE NEW HOLLIS STREET CHURCH, BOSTON, MASS. MR. GEORGE F. MEACHAM, ARCHITECT, BOSTON, MASS.

As we published in our issue for March 7, last, a view of the venerable edifice, which had been abandoned by its owners for a new structure and a more fashionable quarter of the city, it seemed worth while to show what sort of a new lamp had been secured in place of the old.

SEWAGE FUEL AND THE PROCESS OF MAKING IT.

Old Furniture from the Collection of the Wm. M. Emerson, C. Shaw, North Beverly, Mass.

THE following paper by Carl H. von Klein, A. M., M. D., of Dayton, Ohio, will be found of interest as suggesting a means for the disposal of sewage: —

Ever since the fact has been recognized that zymotic, constitutional and even local diseases are produced by miasma or offensive effluvia of obnoxious gases arising from privy-vaults and other places where animal and vegetable matters are deposited and there undergo decomposition, it has become a study worthy the intellect of sanitary scientists to know wherein lies the remedy. What shall we do with our excrement and garbage, which contaminate the water we drink and the air we breathe? has been the inquiry of ages. In my mind there arose several years ago the question, "Could this decomposed and decomposing matter be metamorphosed so as not only to be harmless, but actually advantageous, to suffering humanity by being converted into fuel?" Here was required a zeal for scientific and chemical research. I feared, too, that my knowledge of chemical science was too limited to pursue those investigations with advantage. In fact, it appeared necessary to possess the knowledge of a manufacturing chemist, not of an artificer like myself. Thinking perhaps I would stumble on some excellent method by borrowing from writings and teachings of others more competent for the task, many years have elapsed and numberless experiments have been made without encouragement. Small is the number of works on chemistry I have not consulted.

For my object they appeared as a mere barren desert. No one to whose voice I wanted to listen could give me any information respecting it. All these obstacles were very discouraging, but I continued. I now have the honor to disclose the method by which it can be accomplished. The substance may be treated anywhere, in the vault or in an open field, in the following manner: For example, take a vault containing forty barrels of excrement; throw in one barrel of chloride of sodium (salt). Twenty-four hours after, throw in fifteen bushels of unslaked lime. This will form chlorinated lime; the fumes may be started with four ounces of nitric acid. Let it remain for eight days; then it will all be dissolved and the contents disinfected. Next add seventy-five pounds sal soda. This will solidify within ten days, unless there is a very great excess of liquid, in which case the proportion of lime may be increased, thus completely and entirely disinfecting and deodorizing the mass; and it may now be made into bricks, which will take about thirty days to dry in the open air and be ready for use as fuel. It is odorless and in every way cleaner than any other fuel known. It can be seen that all the ingredients used with the animal and vegetable matter have disinfectant qualities. It produces a better flame and retains more heat than Allegheny coal, the salt and soda both having flame-inducing qualities, and the lime the heat-retaining quality.

The question now arises as to the expense of producing this fuel. We will, therefore, estimate on forty barrels of excrement:

1 barrel of salt	$1.00
15 bushels of lime at 12 cents per bushel	1.80
75 pounds of soda at 1 cent per pound	.75
Labor (one day)	2.00
Total	$5.55

This will equal three tons of coal at the rate of $3.50 per ton, making total $10.50, almost within a fraction of one-half the cost of the cheapest fuel we have in the market. There is another point to which I desire to call attention, of great importance. The above mode of preparing the fuel is of that which is collected in vaults. If the sewers were provided with receiving-basins at the outfall, into which all garbage might also be placed, the whole mass could there be treated in the same manner. There is only the question of adoption of this important discovery, the outcome of sanitary science, that stares us in the face. I cannot see what excuse can be offered to let it remain idle and jeopardize human life, as the method is cheap, clean and good —*The Metal Worker.*

PREVENTION OF DRY-ROT IN TIMBER.

Head of Lion, Mediæval Sculpture.

WE recently published an article showing the causes of dry-rot in timber, and amongst other processes of preservation we referred to a paper by Mr. Boulton on its antiseptic treatment. As the subject is an important one to wood-workers, we now give the following: "There can be but two opinions as to the growing importance of studying the question of timber preservation, having regard more particularly to the reckless manner in which our own forests have disappeared, and the little care that is bestowed on those of our colonies and the United States — forests as yet of vast area, but, nevertheless, thinning so rapidly as to be palpable to the most casual observer. It is true that the substitution of iron and steel for wood in the navies of the world has largely diminished the call for timber in that direction, but this diminution is made up for by the enormous extension of the railway system and the demand for sleepers and telegraph poles, as also for the piles necessary for the great harbor and reclamation works, that are so numerous at the present day." Any information concerning the practical preservation of wood is therefore of extreme value, and Mr. Boulton's pamphlet[1] (the result of a paper read last autumn before the Institution of Civil Engineers) is one which deserves careful study.

The appearance on a large scale of the dry-rot in the ships of the British Navy, at a time when they really were the wooden walls of old England, was naturally a subject of considerable alarm, when we know that a single seventy-gun ship required for its construction the oaks of forty acres of forest, and therefore it was not to be wondered at, that as early as the beginning of this century, various proposals were made to stem the evil by the use of various salts of metals. The inquiry assumed more definite proportions, however, when the railway era was fairly inaugurated, and it was found that stone sleepers were too rigid to be useful; and several materials were experimented upon for timber preservation with more or less success. The first system of treatment was called Kyanising, after its inventor, Mr. Kyan, and consisted of the use of corrosive sublimate. It answered the purpose very fairly, especially when the timber was in a dry situation, though it failed when tried under water, and particularly under sea water. Moreover, corrosive sublimate was found to be rather too volatile at ordinary temperatures, and too injurious to those who had to handle it. Margarising, the system adopted by Mr. Margary, was the employment of the sulphate of copper, which appears to be the most reliable of all the metallic salts, and is still in use in France. Burnettising (after Sir William Burnett) was the adoption of chloride of zinc, a good timber antiseptic, but very soluble in water. It is still in favor in Germany and Holland. Finally came Mr. Bethell's celebrated patent for creosoting — a bad name for the existing process by coal-tar, as in reality creosote is a product of the destructive distillation of wood, which has never been used for timber preservation; and the only excuse for the name was because somebody discovered carbolic acid or phenol in both coal-tar and wood distillation, so that it must be understood that creosote, in its popular application to wood-preserving, is not creosote, but oil of tar.

The basis of the action of all these remedies was supposed to be that they coagulated the albumen of the sap, and formed insoluble compounds that arrested decay; but as it has been proved by experience that the salts of metals are not so efficacious or so permanent as the tar-oils, the so-called creosoting process has now for a considerable period outlived it competitors. Even in France, where the sulphate of copper has held its own longer than anywhere else, partly because there was a difficulty of getting the creosote, partly because Dr. Boucherie injected the sulphate in a peculiarly ingenious manner, and partly because it was noted that the salts of metals became washed out in damp situations, even there the creosoting process has met with great approbation, since M. Forestire observed how thoroughly the timber was protected against that most troublesome pest, the teredo navalis. The oil used in creosoting is thus prepared. When coal is carbonized for gas-making, the products given off are four, viz.: illuminating gas, ammoniacal or gas-liquor, coal-tar, and coke — all of them, in their several ways, of extraordinary commercial value, though, in the present case, the coal-tar, a black treacly-looking substance, is all that we have to deal with. It may be mentioned, however, incidentally, that the waste or gas-liquor is the parent whence the ammonia group is manufactured on a large scale

[1] Boulton on "*The Antiseptic Treatment of Timber.*"

By distilling the coal-tar, three separate groups of products are obtained: first, the oils which are lighter than water, such as the naphthas, which are of incalculable importance to the country, as from them are ultimately procured the aniline dyes; secondly, the oils which are heavier than water; and, thirdly, the pitch, which is the residuum of the distillation. The lighter oils form a category of themselves, quite distinct from the heavier ones, and have never been used for creosoting purposes; but they are extremely rich in their own particular constituents, yielding, amongst other results, the benzoles from which the aniline is obtained, the toluols, the solvent and burning naphthas, and carbolic acid, whence is derived the picric acid used for fulminating purposes. The heavy or "dead" oils form the creosote of the timber-yard, and they were formerly treated *en masse*, though now each constituent can be separately removed according to its volatility. These dead oils are divided by the trade into two kinds: "London" and "country," the former being the distillation from the best Newcastle coals, which are usually supplied to the south of England, and are much richer than other coals in semi-solid substances, such as anthracite, naphthalene, etc. The country oils, on the other hand, are distilled from the midland coals, and are more volatile, besides containing a larger proportion of tar-acids. In the earlier days of Bethell's patent, the heavy or dead oils were alone used, it being considered that the crude naphthas were useless as antiseptics, and that the pitch, from its solidity, would form an impediment to the injection; but the fashion gradually came into use of mixing a small percentage of country with the London oils, as dilutents of the more solid material, and, in point of fact, the country oils became popular and mentioned in specifications.

The inspectors liked them because they were thinner and injected with less trouble, and also because the timber thus treated looked cleaner and less muddy. The late Dr. Letheby, too, gave a great impetus to the growing use of the country oils, as he considered that the carbolic acid (which had been discovered in coal-tar by Runge, in 1834) was the key of the whole position, and that the efficacy of the treatment consisted in the percentage of carbolic acid. It was his object, therefore, to exclude the naphthalene and para-naphthalene as of no value, but to include the lighter portions of the oils, viz., those which distilled between 360° and 490° Fahrenheit, as containing the tar-acids in the greatest abundance. Here, again, incidentally, we may mention that this para-naphthalene, useless in timber preserving, has been found to ultimately yield anthracene, the parent of alizarine, that beautiful red dye that has so completely superseded madder in textile operations.

Dr. Letheby, however, did not have it all his own way, for the investigations of De Gemini and Rottier, in France, and of M. Coisne, in Belgium, seemed to entirely disprove his conclusions. The latter gentleman, an engineer in the service of the Belgian Government, placed shavings in a putrefying pit for four years, saturated with creosote containing respectively fifteeen per cent, eight per cent and seven per cent of tar-acid, while one sample was of heavy specific gravity, and held no tar-acid whatever. This last experiment, however, was the most successful of all, and throughout the whole series it was evident that the results were in favor of the heavy oils, and that the tar-acids were of no use at all. The Belgian Government accepted M. Coisne's statement, and does not stipulate in its railway specifications for any tar-acids, though it allows thirty per cent of naphthalene, one of the very substances discarded by Dr. Letheby. Following an inverse method of examination, M. Coisne procured and analyzed some creosoted sleepers that had resisted decay for twenty years, and found no tar-acids, but on the contrary, plenty of naphthalene. Similar experiments were undertaken by Mr. Boulton, in 1882, on sleepers from various railways which had been in use from sixteen to thirty-two years, and his analysis, says the *Builder*, proved four things: 1. That no tar-acids were detected by the ordinary methods. 2. In the majority of cases the semi-solid constituents, such as naphthalene, were present. 3. Only small percentages remained of oils distilling below 450° Fahrenheit; all these facts proving that it was through the action of the heaviest and most solid portions of the oils that the preservation was effected. 4. He detected an alkaloid called acridine, which he thought played an important part in the action, it being undoubtedly a powerful germicide and solidifying within the pores of the timber, without evaporating or being washed out. Mr. Greville Williams also came to the conclusion that the antiseptic results of creosote were due more to the basis of alkaloids than to the tar-acids, the former remaining while the latter seem to disappear. It is therefore most probable that it is this unfortunate quality of evaporation that disqualifies the tar-acids, seeing that, taken *per se*, there is no doubt but the acids are powerful antiseptics, and that the presence arrests decay. Mr. Boulton's experiments show that if tar-acids and napthalene be separately exposed at the same temperatures, the former will evaporate much more quickly than the latter; indeed, by repeated washings with cold water, both carbolic acid and cresylic acid (its near relation and a constituent of tar-oil) can be completely disposed of, a most important fact in connection with the exposure of timber to sea-water.

Viewing all these facts in their bearings upon specifications, it would seem as if the London oils, as they come from the still, are not sufficiently volatile, nor do they comply with the requirements as regards the percentage of tar acids. A pressure is, therefore, put upon the manufacturer to meet the case by taking out some of the heavier portions, by which the bulk is rendered lighter and the proportion of the tar acids to the diminished bulk is increased. But Mr. Boulton considers that this is a mistake, and would rather relegate the lighter portions of the tar acids, and especially carbolic acid, to their proper position as sanitary antiseptics for which they are unrivalled, and would encourage the use of the heavier portions. He also agrees with the joint creosoting specification of Sir Frederick Abel and Dr. Tidy, who resolved to exclude no semi-solid bodies which completely melt at 100° Fahrenheit, and further changed the standard of volatility from ninety per cent at 600° Fahrenheit to seventy-five per cent.

Without going into the vexed regions as to the exact relations of putrefaction and the germ theory, the conclusions drawn are, that the best antiseptics for timber are to be found amongst oils and bitumens, which fill up the pores of the wood. Of such bodies, those that contain germicides are to be preferred, and other properties being equal, those which either solidify in the pores of the wood, or which require an extremely high temperature to volatilize them, and which are insoluable in water, are the best of all. With regard to the creosoting process, Mr. Boulton lays great stress on the hygrometic condition of the timber at the time of injection, neglect of which has often been the cause of failure. The power of absorbtion of moisture in woody fibres is so great — fir timber being able to take up as much as from sixty gallons to one hundred and fifty gallons of water to the load of fifty cubic feet — that it has always proved of great difficulty in the way of treatment, as the subjecting of the timber to a dry heat invariably results in injury to it. Mr. Boulton has however, successfully met the difficulty by a most ingenious combination of air-pump action with the use of creosote heated up to 212° Fahrenheit. With charges of very wet sleepers, he has withdrawn water equal in volume to fifty gallons per load of timber, the water being replaced with an equal volume of creosote by the action of the air-pump alone. — *Woods and Forests.*

THE "CRINOLINE" CHIMNEYS OF THE CAMBRIA IRON COMPANY.

Old Chair at Soldiers' Carnival, Boston, Mass. April 1885.

AT the suggestion of Mr. John Bogart, secretary of the American Society of Civil Engineers, a number of members of the Society presented papers on the design and construction of chimneys containing features worthy of note. Among them was one by Mr. George Webb, of the Cambria Iron Company, on the "crinoline" chimneys at Johnstown, which we quote:

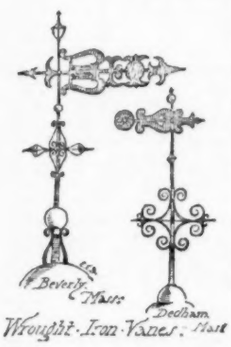
These chimneys are connected to the boiler-house by underground brick conduits, and are intended as "uptakes" for the unused gases. The surplus gases are used for generating steam, and but little is left after passing under the boilers. Sometimes the fires under the boilers must be reinforced with raw coal, in which case the chimneys convey some smoke. The ground is bad, and hence there is a deep foundation of masonry below the surface. From the entrance of the conduit to about eight feet above the surface the base of the chimney is hexagonal, of hammered stone, surmounted by a cut-stone coping. Six three-inch anchor bolts are built into this base, and provided with suitable nuts to hold down a base-plate four inches thick, and with an upward projecting rim six inches high around a circle twelve feet in diameter. From this base-plate it is one hundred and forty feet to the top of the chimney. At the top is a moulded cast-iron plate similar to the base-plate, with the rim projecting downward, ten feet two inches in diameter. The batter is therefore twenty-two inches in one hundred and forty feet. Between these two plates the "crinoline" is constructed. It consists of sixteen vertical lines of ordinary wrought-iron railroad rails, four-inch base, with the base outward, surrounded by forty-five hoops. The rails may be in sections of any length which will allow of the splice being riveted to a hoop, care being taken to avoid having more than one rail-splice on the same hoop. Well-selected old iron rails with good bases, or sound sections of No. 2 or No. 3 rails, are as good as any.

The hoops are of wrought-iron rolled from iron three-fourths inch thick. Each hoop is in two pieces, bent cold to a true segment in a wedge-adjusting bending machine, which allows any desired delicacy of touch. The piece lies on edge while being bent, the "former" being more readily tried in that way. If bent hot the curve cannot be maintained while cooling. The two halves of each hoop are spliced on the inside with flat plates, secured with four rivets and one bolt in each end of each section, care being taken that at least three hoops shall intervene solid before another hoop-splice is made between the same verticals. There are forty-five hoops, the bottom one being near the base-plate projection, and therefore about twelve feet in diameter. The distance in the clear from this hoop to the next one above is twenty-two inches. The clear distance between each pair of hoops gradually increases from the bottom to the top, the distance in the clear between the top hoop and the next below being fifty-four inches. Each hoop is riveted to each rail with two rivets — one in the upper flat space of the hoop, and the other on the other flange of the rail in the lower flat space of the hoop.

The iron skeleton thus made is so stable that no scaffolding is used in construction. Two boards across a lower ring will hold a portable forge. A rail section is hauled up, put in place, adjusted and riveted; then others in the same way. The central opening of the chimney is eight feet, which is preserved throughout. The bricks fill from this central opening to the inner side of the hoops, special bricks being moulded to fit around the rail heads, and thus save time and waste of cutting. To save cutting bricks the masons carried the inside parallel with the outer batter, and when the inside got to eight feet in the clear they set back on the inside to an even brick, and then followed the outer batter until the inner diameter reached eight feet again, and so on. There are about one thousand bricks, average, to one foot in height of stack. Five bricklayers and nine laborers lined the first chimney built in twenty-one days, the next in eighteen and one-half days. They used no scaffolding but two scantlings and a few boards on the inside at convenient intervals, thus leaving a well-hole open the entire height. These were removed from the top downward after completion. A light iron ladder is riveted to, say, every third hoop the entire height. The convenience of this for construction, examination and repairs, if needed, is obvious.

The strength of this chimney is in the "crinoline." The bricks are merely for inclosure of the gases. Their mass is so small and the walls are so thin that they are never hot. The "crinoline" of the first chimney was built the entire height before the brickwork was begun. Some heavy storms occurred while it stood thus, and it never wavered.

SHALL WATER-PIPES AND GAS-PIPES BE CONNECTED WITH LIGHTNING-RODS?



EVERY man who builds a house become interested in the subject of lightning-rods, even if the subject of electricity had failed hitherto to attract him. In placing lightning-rods upon a building, the question immediately arises, "Shall the water-pipes and the gas-pipes be connected with the exterior lightning-rod?"

Theoretically, there is no doubt that this connection should be made. Great care, however, should be taken that the connections should be large enough not to be melted by a discharge of lightning, and that there should not be any break of metallic continuity caused by paint, varnish, or cement. In the fifth annual report of the Water Commissioners of the city of Fitchburg, Mass., this paragraph occurs:

"During a violent thunder storm on the sixth day of June, two houses were struck by lightning, one on Burnap Street and one on Milk Street. The electric fluid in both cases followed the service-pipes from the buildings to the four and six inch wrought-iron cement-lined main pipes, and when it reached these mains its path of ruin was fearful. In some cases a length of pipe would be split from end to end, others would be perforated with holes, which in almost every case indicate that the fluid passed from the outside to the inside of the pipe. Nearly every joint on the two thousand feet of its course was opened, and one gate and two hydrants were so badly damaged as to be useless. The pipe was replaced by cast-iron pipe, and the gate and hydrants by new gate and hydrants, the total cost of which was nearly $1,700. This loss is added to the maintenance account of the current year. Three times our main pipes have been struck by lightning, and each time is more alarmingly suggestive of what accidents may happen from the same cause. Cannot some electrician give us a plan of protection?"

On investigation it was found that the cement-lined pipe was made as follows: The wrought-iron shells were eight feet long, made of about eighteen-gauge iron, lined on the inside with cement one-half inch thick, and covered on the outside with cement from one-half inch to one inch in thickness. In laying, the ends were butted together, over which is a sleeve filled with cement, about six inches in length, to make a water-tight joint. In laying, the iron of one length does not usually come in contact with the iron of the next length, being separated by from one-eighth inch to one-fourth inch of cement.

In taking up the damaged pipe it was generally found burst from end to end; then for three or four lengths no trace of lightning could be discovered on the outside of the cement covering; but at each joint one to ten holes could be found punched from the outside of the pipe into it, from one-tenth of an inch to three-fourths of an inch in diameter; then a sleeve would be cut as smooth as could be done with a pair of snips; then a length burst; and then the lightning disappeared at a hydrant or gate.

The water-mains of Fitchburg have been damaged seriously by lightning five times. In every case buildings have been struck, and the discharge has followed the supply-pipes to the main; there it has divided and followed the main each way until it has reached a valve. In 1877 about 2,000 feet of mains were destroyed in one shower. In every case the damage has been confined to the old cement-lined pipes.

It will be seen that the cement-lined pipe when filled with water constitutes a Leyden jar, which is quickly ruptured by being heavily charged. It is manifestly unsafe to cover the iron-mains with any insulating varnish unless metallic connection is made with each section of the main at the joints, and these joints are connected to the water by a unvarnished piece of iron or other metal. If cement-lined water-pipes are connected with the lightning-rods, it is necessary to remove the cement at regular intervals to allow contact between the water and the iron of the pipes. It would be sufficient to insert pieces of iron here and there in the cement, one end of such pieces being soldered to the iron of the pipe and the other end being in free contact with the water.

If the gas-pipes are not insulated from each other at the joints, there can be no danger in connecting the lightning-rods with them. The electrical continuity, however, of the gas-pipes should be carefully ascertained. The practice of connecting telephone-wires with gas-pipes shows that in most cases this electrical continuity is insured by the present method of laying the pipes. — *Scientific American.*

THE NEW YORK HIGH-BUILDING LAW.

AN Act to regulate the height of dwelling-houses in the city of New York. Passed June 9, 1885; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows: —

SECTION 1. The height of all dwelling-houses and of all houses used or intended to be used as dwellings for more than one family, and hereafter to be erected in the city of New York, shall be regulated in proportion to the width of the streets and avenues upon which they front.

SECT. 2. Such height, measured from the sidewalk line, and taken in all cases through the centre of the façade of the house to be erected, including attics, cornices and mansards, shall not exceed seventy feet upon all streets and avenues not exceeding sixty feet in width, and eighty feet upon all streets and avenues exceding sixty feet in width. Nothing in this act shall be construed as affecting buildings for which contracts have been signed prior to the passage of this act, or for which plans have been filed and approved by the Building Department.

SECT. 3. This act shall take effect immediately.

STATE OF NEW YORK, Office of the Secretary of State, } *ss:*

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom, and of the whole of said original law.

JOSEPH B. CARR, Secretary of State.

NOTES AND CLIPPINGS.

VALUE OF THE ART TREASURES OF PARIS. — An inventory has been made of all the objects of art belonging to the city of Paris. The total valuation amounts to 12,256,860 francs, of which 8,078,551 francs belongs to the sixty-eight churches of Paris, and 4,178,000 to the secular buildings. The sculptures at the Hôtel de Ville are valued at 1,384,000 francs, the tapestries at 2,250,007 francs. — *Exchange.*

TOUGHENING TIMBER. — This is a new process by which it is claimed that whitewood can be made so tough as to require a cold-chisel to split it. This result is reached by steaming the timber and submitting it to end pressure, technically "upsetting" it, thus compressing the cells and fibres into one compact mass. It is the opinion of those who have experimented with the process that wood can be compressed 75 per cent, and that some timber which is now considered unfit for use in such work as carriage building could be made valuable by this means; and more especially since the rapid consumption of our best ash and hickory will sooner or later render some substitute necessary.

APPROACHING EARTHQUAKES. — The earthquake shocks which were felt last week over a wide area in Yorkshire remind us that an authority on the subject of these phenomena, M. Delaunay, of Paris, is of opinion that next year will see the recurrence of upheavals of the earth's crust in an intensified form. M. Delaunay is a prophet of evil, but unfortunately all his prophecies have hitherto come true. His specialty is earthquakes, and he predicts them only too surely. In 1877 he announced that the year would not conclude without violent disturbances of the earth, and as a matter of fact, two frightful catastrophes on the coasts of South America followed. In 1883 M. Delaunay again pointed to approaching earthquakes, and soon after the volcanic eruptions in the Indian Archipelago occurred, by which thousands of human beings lost their lives, and hundreds of square miles of terra-firma were engulfed by the sea. Toward the end of last year M. Delaunay once more raised his warning voice, and the earthquakes in Spain proved how well founded were his warnings. Quite recently he has prophesied very severe volcanic disturbances for 1886. Having acquired a well-merited notoriety in foretelling earthquakes, some weight ought to be attached to M. Delaunay's utterances. He affirms that next year these natural phenomena will be of a very intense character, and that they will show themselves either when the earth is under the direct influence of a planet of the first rank, such as Jupiter, or under that of a group of asteroids, or at a time when sun and moon are nearest to our planet at the same time. —*Iron.*

PROPOSED DRAINAGE REGULATIONS. — The following excellent regulations have been proposed for the city of Glasgow, Scotland: 1. The positions and sizes of all drains, pipes, cesspools, or traps, and all soil and rain-water pipes and conductors shall be shown distinctly upon the plans submitted, and the weights per foot of the lead or iron soil-pipes, conductors and cesspools be marked on the plans in figures. 2. Forty-eight hours' notice must be given to the Master of Works, at his office, previous to commencing the laying of any drains. The party giving the notice will receive a card of permission to open the street, which card will be held as proof of the notice having been given. 3. All connection between drains and the public sewer will be made by workmen

of the statute labor department, and shall be paid for by the proprietor. 4. Every drain-pipe must have a uniform fall of not less than one inch to every lineal yard, and every pipe must be thoroughly packed and resting entirely on the solid earth. When the Master of Works deems it advisable, he shall require concrete foundations to be put under and around the drain pipes. 5. The joints must be well cemented and all cement projecting on the inside must be removed. 6. Sufficient traps and ventilation must be provided for, and fixed to the satisfaction of the Master of Works. 7. Before covering, all pipes must be inspected by the Master or his representative, and no junction connecting drain-pipes and plumber-work to be covered up until examined and passed by him. 8. The Master of Works to have power to use the smoke-test on all drains and plumber-work before the building is occupied, and at any other time he may consider necessary, all expenses connected with the test to be paid by the owner of the property. 9. No dwelling shall be occupied until the Master of Works has given a certificate that the drains and cesspools with traps, have been properly constructed, and the house otherwise fit for occupation. 10. Proprietors and contractors will give every assistance to the master of works, for the purpose of performing the necessary inspection.

The Paris Abattoirs. — The abattoirs at La Villette, which have replaced the analogous establishments scattered throughout Paris, cover an irregular surface of nearly fifty acres, and the buildings cover about 58,000 square metres. The general aspect is rather imposing. The façade towards the Rue de Flandres shows a grille about 20 metres interrupted by pilasters intended for allegorical groups. From the principal front six large avenues radiate, intercepted by smaller cross ones. All the buildings have Cronij stone dressings with filling of rough-dressed masonry or of brickwork. The partition-walls are in hard brick covered with Portland cement. The floors are of iron, covered with plastes and bitumen, the roofs entirely of tiles. To give some idea of the importance of the abattoirs and of the service they render, we may add that the work of the establishment occupies 150 slaughter-houses contained in eight groups of buildings; that the dwellings for butchers and shepherds, etc., occupy ten blocks of buildings, and that the stalls can allow space for 2,000 oxen, 7,000 sheep, 2,700 pigs, and 2,000 calves. Each year there is some new improvement in the general arrangement. Now it is a special railway to be made around the line of enclosure, communicating with all the other railways radiating from Paris to the provinces; now another suspension railway is constructed for the quicker circulation of the meat, etc. Farther on, three large pavilions are occupied in roasting pigs by gas; not to speak of other structures for the cleansing of offal, the triperies, the blood store, the extraction of albumen and animal oil, the preparation of calves' heads and sheep's feet, etc. For the purpose of having everywhere the indispensable element of cleansing, water from the Marne and from the Ourcy is received into sixty iron reservoirs which project into the establishment at all points. This is not all, for when the buildings are completely finished they will cover a space of 87,000 metres, and contain 311 slaughter-houses, of which 179 only are at present in work. The works have cost up to this moment about 16 millions (francs); about 7 millions more will be required to complete them. The cattle market, which forms the complement to the abattoirs, and opens on the Rue d'Allemagne, was commenced in 1867, and has cost about 19 millions. — *The Builder.*

A Reminder of Butler's Rule at New Orleans. — Most Northern visitors to New Orleans are agreeably surprised and a good deal puzzled at reading the highly patriotic and Republican sentiments carved on the bases of the statues which New Orleans has erected to the memory of General Jackson and Henry Clay. Beneath General Jackson's mounted figure is cut in strong, deep letters his famous anti-Calhoun toast, "The Union: it must and shall be preserved." Below Henry Clay's impressive form is carved, with equal distinctness, this sentence, taken from the public declarations of the great Whig leader: "If I could be instrumental in eradicating the deep stain of slavery from the character of our common country, I would not exchange the proud satisfaction which I should enjoy for the honor of all the triumphs ever decreed to any successful conqueror."

The surprise of the Northern visitor on reading this noble tribute to freedom and the Union on the streets of New Orleans gives place to a feeling of satisfaction, not unmixed with amusement, when it is recalled to his mind that these inscriptions, so alien to the sentiments of the people of Louisiana at the time the statues were erected, and which are almost in as little accord with the feelings of the dominant race of today, are a relic of General Butler's rule in New Orleans. That doughty patriot found these statues unadorned by any text from the writings or speeches of the distinguished men wlfose memory they were intended to commemorate. He straightway supplied the omission by having carved on them the sentiments given above, and they have ever since served to point a moral to the people of New Orleans, who, little as they doubtless relish them, have not seen fit to dig them out of the solid granite where Butler made them a premanent public record. — *Philadelphia Press.*

The Lightning-Rod on the Washington Monument.—A remarkable assertion is made in regard to the lightning-rod of the Washington Monument. It is said that electrical tests with a galvanometer discover a resistance of two ohms. This indicates clearly a very imperfect ground connection, and shows that the present [former] apparatus cannot perform the work expected of it. The inability to discharge a heavy stroke of lightning into the ground instantly is obvious under the circumstances, and offers an explanation of why a stone near the rod was instantly shattered. The only wonder is that more damage has not been done. The aluminum tip is reported to be all blackened and battered with lightning already. The placing of a lump of metal on top of a slender rod is said to be a mistake and another element of danger. It takes such a charge of electricity that the rod connection below is not sufficient to carry all away, and there must consequently be more or less discharge in other directions. In reference to the imperfect ground connection, which is the most important point of all, it is supposed that the concrete foundation into which the lightning-rod is sunk explains the resistance shown by the galvanometer. Although it is understood that the rod goes through the foundation and buries itself in the wet earth below, more perfect arrangements could, it is believed, be made. The scientists lately called upon to make a report on this subject have, it is understood, recommended additional tips on metallic prongs about the top of the monument, and these contrivances have been ordered. Electricians say that this will only increase the danger, All these criticisms may be but theories, but they come from a source entitled to the utmost consideration.—*Boston Transcript.*

Relative Costs of Fluid and Solid Fuels. — At the last meeting of the Engineers' Club of Philadelphia, the secretary presented, for Mr. James Beatty, Jr., a paper upon the Relative Costs of Fluid and Solid Fuels. After giving the relative advantages in economy of labor in use, reduction of weight and bulk, ease of manipulation of fire, perfection of combustion and cleanliness, the principal substances, experiments and processes are noted.

Notes and tables are given as to the compositions of different fuels, their heat units and evaporative capacities, efficiencies in furnace, prices per unit, and lbs. of fuel for $1.00 and lbs. of water evaporated from 212° F. for $1.00, in various localities. The paper concludes with the following table of which the author says: "These figures are very much against the fluid fuels, but there may be circumstances in which the benefits to be derived from their use will exceed the additional cost. It is difficult to make a comparison without considering particular cases, but for intermittent heating, petroleum would probably be more economical, though for a steady fire, coal holds its own."

	Anthracite.	Bituminous.	Petroleum.	Coal Gas.	Generator Gas.	Water Gas.
New York	1.00	1.08	1.71	14.92	22.90	8.70
Chicago	1.00	.71	1.50	8.72	18.30	7.00
New Orleans	1.00	.59	1.56	17.90	15.30	5.80
San Francisco	1.00	.64	1.50	8.75	9.40	3.50
London	1.00	.61	2.05	7.16	17.70	6.30
Port Natal	1.00	.90	1.21			
Sydney	1.00	.34	1.39			
Valparaiso	1.00	.44	1.03			

Danger from Superheated Steam. — The Philadelphia Underwriters Tariff Association recently employed Professor Gibson to prosecute some experiments with steam-pipe coverings claimed to be fireproof. The result of the experiments is published in a circular, part of which we reproduce below: —

Experiments with Steam-pipe Coverings.

Name and Kind of Covering.	Range of Temperature Degrees, F.	Results.
Chalmer Spence Co., Sec. hair felt.	300 to 620	Began to char at 350° F., as was shown by the smoke issuing from it, and continued so until end of experiment. On subsequent examination, the first layer of felt was found completely charred through. No indication of flaming during the test.
Kelley Scroll Sec. Co., Sec. hair felt.	300 to 620	Results precisely same as above.
Shields & Brown, Pat. insulated air cov.	300 to 629	Began to char at 350° F., and continued to do so until at the close of the test. This broke out into a flame, the covering having been almost entirely consumed.
Kelly Covering Co., Cotton-seed fibre.	300 to 620	Began to show signs of charring at 400° F. On being removed and examined, the lining and layer of cotton-seed fibre was found charred about one-half through.
L. F. Aldrich & Co., Pat. metallic covering.	300 to 720	Showed signs of charring only when the temperature attained 600° F. On examination, was found charred nearly one-half through.
The Ainsworth Co., Wood pulp paste.	300 to 720	No marked signs of burning, but on examination was found to be somewhat charred on the inner surface.
Kelley Scroll Sec. Co., Black wool.	300 to 720	Smoked slightly from the first; was found to be completely charred about one-half through the layer of wool.
Kelley Covering Co., Champion felt.	300 to 780	Began to smoke at 350° F., and continued to the end of trial; was found charred one-half through.
Kelley Covering Co., Corrugated paper.	300 to 780	Began to char at about 350° F. The inner layers next to the pipe were completely destroyed; outer left intact.
Shell of green pine wood closely fitted to the pipe.	250 to 680	Began to smoke at 250° F., charring one-eighth to three-sixteenths inch deep in one and one-half hours' time. On examination, the wood was found completely destroyed, perfect charcoal resulting.
Shell of dry pine wood closely fitted to the pipe.	250 to 680	Began to smoke at 290° F. At the close of experiment, the charred part did not differ materially in depth from the piece given above. On the edges, the charcoal seemed to have been formed a little deeper than the middle. This was the case especially where the pieces joined together. At the temperature attained, there was no indication of blazing, but this is believed to be only a question of time.
Wheat chaff in asbestos shell.	250 to 680	Began to smoke at 250° F. From the beginning to the end of the experiment, this smoked heavily, and on examination, over three-fourths of the chaff was found completely reduced to ashes, although no blazing took place during the trial.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

320,697. WOOD FLOORING.—Chas. E. Rider, Rochester, N. Y.

320,698. WOOD FLOORING-TILE.—Charles E. Rider, Rochester, N. Y.

320,708. FAUCET.—Peter Schofield, Pomona, N. J.

320,709. AUTOMATIC SEAL-TRAP FOR WASH-BASINS AND WATER-CLOSETS.—Wm. D. Schuyler, New York, N. Y.

320,718. CARPENTER'S SQUARE.—William Steers, Brattleborough, Vt.

320,736. TOOL FOR REMOVING CHIPS FROM MORTISES.—Godfrey Winzenreid, Schulenburg, Tex.

320,757. SHEATHING FOR BUILDINGS.—Denison S. Chesebro, Geddes, N. Y.

320,768. APPARATUS FOR COMBINING HOT-AIR AND STEAM FOR HEATING PURPOSES AND POWER.—Wm. T. Fenton, New York and David S. B. Bennet, Brooklyn, N. Y.

320,786. INSIDE SHUTTER.—Walter A. Holbrook, Milwaukee, Wis.

320,789. SPRING-HINGE.—Daniel W. Housley, Chicago, Ill.

320,790. DOOR-LATCH OR CHECK.—Matthew P. Ismay, Newcastle-upon-Tyne, England.

320,794. CHIMNEY CAP AND VENTILATOR.—Wm. J. Kayser and Charles Kayser, Milwaukee, Wis.

320,796. FASTENING FOR MEETING-RAILS OF SASHES.—Hiram T. King, Rochester, N. Y.

320,797. WRENCH.—Hiram T. King, Rochester, N. Y.

320,808. WINDOW.—Martin S. Millard, Kansas City, and George H. King, Salisbury, Mo.

320,813. RADIATOR-VALVE.—W. Baird Patton, Duluth, Minn.

320,815. CHIMNEY-COWL.—George W. Powers, Jas. H. Jones, James M. Powers, Streator, Ill.

320,822. TILE.—Paul Simons, Darmstadt, Hesse, Germany.

320,845. GUIDE FOR SAWING STAIR-RAILS.—Strong Burnell, Anacortes, Wash.

320,854. FIRE-ESCAPE AND ELEVATOR.—Chas. R. S. Curtis, Quincy, Ill.

320,865. BRICK AND TILE MACHINE.—Frederick E. Frey, Bucyrus, O.

320,866. BEVEL.—Charles Friess and John N. Todd, Minneapolis, Minn.

320,868. BIT-BRACE.—Hiram E. Fuller, New York, N. Y.

320,871. BURGLAR-ALARM.—William Goldspohn, Lodi, Wis.

320,872. PIPE-WRENCH.—James F. Guthrie, Jr., Cambridge, Mass.

320,887. MIXING WHITE LEAD WITH OIL.—Wm. H. Pulsifer, St. Louis Mo.

SUMMARY OF THE WEEK.

Baltimore.

STORE.—Chas. L. Carson, architect, is preparing plans for A. S. Alder, Esq., for a four-st'y brick, stone and terra-cotta building, 22′ x 90′, to be erected cor. Eutaw and Clay Sts., and to cost $20,000.

VILLA.—Mrs. M. A. Mentz is to have built a stone villa on Charles Street, extended, on lot 66′ x 200′, to cost $10,000, from designs by W. Claude Frederic, architect; Geo. A. Foreman, builder.

DWELLINGS.—W. Claude Frederic, architect, has prepared plans for Wm. T. Phillips, Esq., for 4 three-st'y brick and terra-cotta buildings, with basement, on lot 66′ x 150′, w s McCulloh St., near Laurens St., to cost $20,000; Geo. Moke, Jr., builder.

W. R. Llewellyn, Esq., is having built, on lot cor. Mary St. and Fulton Ave., 17 two-st'y tenements, of a novel design, from drawings by W. Claude Frederic, architect.

ADDITION.—W. F. Weber, architect, is preparing plans for a six-st'y brick, stone and terra-cotta addition to the "Hoen Building," 25′ x 80′, to be erected on North Street, and to cost $15,000.

BUILDING PERMITS.—Since our last report fifteen permits have been granted, the more important of which are the following:—

Henry Williams, four-st'y brick warehouse, e s Charles St., between Camden and Conway Sts.

J. D. Taylor, 6 two-st'y brick buildings, e s Fremont St., s of Pressman St.

E. W. Haviland, 2 three-st'y brick buildings, n s Vine St., between Pine and Arch Sts.

Chas. Milke, 6 two-st'y brick buildings, e s Chester St., s of Jefferson St.

Mrs. A. Greenwald, 2 two-st'y brick buildings, commencing n e cor. Fairmount Ave. and Duncan Alley.

Richard Henschel, three-st'y brick building, n s Saratoga St., w of Gay St.

Geo. G. Fedrick, 7 three-st'y brick buildings, w s John St., commencing n w cor. Mosher St.; and 4 three-st'y brick buildings, n s Mosher St., between John St. and Foster Alley.

Boston.

BUILDING PERMITS.—*Brick.*—*Tremont St., Nos.* 383 *and* 385, store, 47′ x 60′; owners, Sullivan & McDonald; builders, Sullivan & Tobin.

Newbury St., Nos. 314 *and* 316, 2 dwells., 18′ x 48′ and 25′ x 46′; owner and builder, Edwin B. Horn.

Saratoga St., near Byron St., engine-house, 36′ 8″ x 78′ 4″; owner, City of Boston.

Pearl St., Nos. 117–123, mercantile, 40′ 6″ and 43′ x 73′ 5″; owner, J. H. Lee; builder, G. W. Pope.

Wood.—*Sagamore St.*, near Savin Hill Ave., dwell., 24′ x 30′; owner, Chas. Kelley; builder, P. F. Hanlon.

Magazine St., Nos. 29 *and* 31, dwell., 20′ x 45′; owners, John Dimmick; builder, Madden & O'Brien.

Faneuil St., near Parsons St., dwell., 20′ x 28′; owner, Patrick Kenney; builder, D. M. O'Connell.

Everett St., near Lincoln St., dwell., 22′ x 28′; owner and builder, G. W. Mixer.

Skinner St., near South St., dwell., 30′ x 30′; owner, M. J. Towle; builder, C. W. Higgins.

Fairview St., near Train St., dwell., 32′ 6″ x 41′ 6″; owners, Stephenson & Appleton; builders, Noyes Bros.

Tremont St., No. 1405, storage, 25′ x 40′; owner, B. & P. R. R. Corporation; builder, F. Folsom.

Boston St., near Hamlet St., mechanical-building, 14′ x 30′; owners and builders, John Horsfield & Co.

Bickford Ave., near Heath St., dwell., 21′ x 32′; owner, J. Cole; builder, J. J. Bennick.

Ashmont St., dwell., 26′ x 34′; owner, G. B. Thayer; builder, D. R. Atwood.

Brooklyn.

BUILDING PERMITS.—*Twelfth St.*, n s, 272′ w Third Ave., two-st'y brick factory, tin or gravel roof; cost, $9,000; owner, W. J. Matheson, 20 Cedar St., New York; builder, A. C. Walbridge.

Fifty-second St., s s, 260′ e Fourth Ave., 2 two-st'y frame dwells., tin roofs; cost, each, $2,000; owner, John D. Holsten, 143 Forty-third St.; architect, S. B. Bogert.

Freeman St., No. 69, three-st'y frame tenement, felt and gravel roof; cost, $4,400; owner, T. Tapken, 157 Franklin St.; architect, F. Weber; builders, John Hafford and C. Dunkhase.

Newell St., e s, 180′ 1″ n Van Cott Ave., 3 four-st'y frame tenements, gravel roofs; cost, each, $5,000; owner, Sarah M. Wentworth, 62 Newell St.; architect and builder, Edmund Wentworth.

Central Ave., e s, 26′ n Magnolia St., three-st'y frame store and dwell., tin roof; cost, $4,000; owner and builder, Ernest Loerch, 61 Himrod St.; architect, Frank Holmberg.

Third Ave., n w cor. Forty-fifth St., three-st'y brick store and flats, tin roof; cost, $4,000; owner, H. L. Schonberg, s w cor. Third Ave. and Forty-second St.; architect, W. A. Fries.

South Third St., No. 340, three-st'y brick dwell. and stable, tin roof; cost, $3,000; owner and mason, Herman Wild, 340 South Third St.; architect, Th. Engelhardt; contractor, not selected.

Greenpoint Ave., n e cor. Provost St., three-st'y brick storage, gravel roof; cost, $6,800; owners and architects, Young & Gerard; mason, Martin Vogel.

Myrtle Ave., s s, 50′ e Stanhope St., two-st'y frame dwell., tin roof; cost, $3,000; owner, Anne Flama, cor. Park Ave. and Broadway; architect and builder, Jas. J. Carolan.

Nostrand Ave., e s, between Macon and Halsey Sts., three-st'y brick and stone school-house, slate and tin roof; cost, about $100,000; owner, Board of Education; architect, J. W. Naughton; builders, F. J. Kelly and Robert Ferguson.

Waverly Ave., e s, 125′ s Greene Ave., three-st'y brick schoolhouse, tin roof; cost, $25,000; owner and architect, same as last; builders, Geo. Philips and P. F. O'Brien.

Van Buren St., n w cor. Reid Ave., three-st'y brick schoolhouse, tin roof; cost, $45,000, owner and architect, same as last; builders, John McQuaid and F. D. Norris.

Stockton St., n s, 235′ e Marcy Ave., three-st'y brick schoolhouse, tin roof; cost, $45,000; owner, architect and builder, same as last.

Lorimer St., No. 558, e s, 118′ s Norman Ave., three-st'y frame tenement, felt, cement and gravel roof; cost, $4,500; owner, Robert Harrold; architect, M. D. Randall; builder, Stephen Randall.

Stockholm St., No. 133, three-st'y frame tenement, tin roof; cost, $3,500; owner and builder, M. Jeffries, on premises; architect, H. Vollweiler.

Stagg St., No. 276, s s, 150′ w Waterbury St., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,100; owner, Chas. R. Baker, 244 Washington Ave.; architect, Th. Engelhardt; builders, C. Nieber and J. Auer.

Stagg St., n w cor. Waterbury St., 2 three-st'y frame (brick-filled tenements, tin roofs; cost, $8,800; owner, Mrs. Mary S. Baker, 244 Washington Ave.; architect and builder, same as last.

Power St., Nos. 96 *and* 98, near Leonard St., 2 three-st'y frame brick-filled tenements, tin roofs; cost, $8,400; owner, George Kern, 313 West Thirty-eighth St., New York; architect, H. Vollweiler; builder, E. Schech.

Butler St., No. 185, s s, 75′ e Bond St., three-st'y frame tenement, tin roof; cost, $3,000; owner, John Clark, on premises; builder, P. Whelan.

Radde Pl., w s, 196′ 6″ s Herkimer St., two-st'y brick stable and dwell.; cost, $4,000; owner, A. Studwell and P. Devan, Sumpter St. and Saratoga Ave.; architect, P. H. Smith; builders, J. Pawell and T. H. Smith.

Chicago.

BUILDING PERMITS.—Wm. Goldie, three-st'y flats, 2964 Vernon Ave.; cost, $8,000; architect, C. Chapman.

F. W. Wolf, two-st'y factory, 326-330 Hawthorne Ave.; cost, $10,000,

S. M. Parish, two-st'y barn, rear 64 Cottage Grove Ave.; cost, $3,500.

Mrs. E. C. Hancock, two-st'y dwell., 39 Bellevue Pl.; cost, $8,000.

Wm. Mertens, three-st'y flats, 238 Sedgwick St.; cost, $4,000; architects, Forman & Jebson.

P. Kessler, 2 three-st'y stores and flats., 459–461 State St.; cost, $15,000; architects, Bauer & Hill.

P. Korlege, two-st'y store and flat, 298–300 West Twelfth St.; cost, $10,000; architects, Furst & Rudolph.

C. Schroder, three-st'y store and dwell., 981 Milwaukee Ave.; cost, $6,000; architect, Burling.

Fuller & Frost, 3 two-st'y dwells., 3301-3305 Forest Ave.; cost, $12,000; architects, Cobb & Frost.

J. Vollmer, two-st'y flats, 73 Jay St.; cost, $3,500.

Mrs. M. O'Neil, three-st'y flats, 119 Fisk St.; cost, $4,000.

H. Wendt, three-st'y store and dwell., 523 West Chicago Ave.; cost, $4,000.

J. McGrath, two-st'y flats, 2250 Dearborn St.; cost, $3,500.

S. Wolf, three-st'y store and dwell., 308 Thirty-seventh St.; cost, $3,000.

M. Klein, two-st'y dwell., 503 West Congress St.; cost, $5,000.

J. S. & Ida M. Dennis, 2 two-st'y dwells., 1227–1235 Washington Boulevard; cost, $16,000.

A. Schumann, three-st'y dwell., 481 Hulbert St.; cost, $6,000.

A. J. Schnell, 2 three-st'y stores and dwells., 810–812 Milwaukee Ave.; cost, $16,000.

J. Weisel, two-st'y dwell., 178 Larrabee St.; cost, $4,000.

E. Lehman, two-st'y store and flats, 18 Francisco St.; cost, $3,000.

J. C. Howell, 2 two-st'y dwells., 53-55 Grant Pl.; cost, $5,000; architect, H. H. Gage.

J. Mohon, two-st'y store and dwells., 1379 West Twelfth St.; cost, $3,000.

T. Kelly, three-st'y store and flats, 389 Larrabee St.; cost, $4,000.

Mrs. W. Johnson, two-st'y dwell., 10 Elizabeth St.; cost, $6,000.

W. L. Thomas, two-st'y dwell., 588 West Chicago Ave.; cost, $3,200.

T. J. Hankins, three-st'y dwell., 230 Warren Ave.; cost, $6,000.

Mrs. W. How, three-st'y store and dwell., 123 Eighteenth St.; cost, $11,000.

Elkan & Stern, 2 two-st'y dwells., 590-592 Dearborn Ave.; cost, $18,000; architect, J. Huber.

H. Quetschke, two-st'y dwell., 140 Centre Ave.; cost, $4,000.

John Cudahy, two-st'y dwell., cor. Thirty-third St. and Michigan Ave.; cost, $60,000; architects, Burling & Whitehouse.

E. H. Thompson, two-st'y dwell., 301–303 Belden Ave.; cost, $10,000.

W. Jensen, two-st'y store and dwell., 750 West North Ave.; cost, $2,600.

L. Jensen, two-st'y dwell., 80 Le Moyne St.; cost, $2,700.

F. H. Schau, two-st'y dwell., 82 Le Moyne St.; cost, $5,500.

W. E. Smith, 3 two-st'y dwells., 321–325 Rhodes Ave.; cost, $8,000; architects, Wheelock & Clay.

F. Bocka, two-st'y dwell., 473 Twentieth St.; cost, $3,500.

J. S. Martin, three-st'y dwell., 192 North State St.; cost, $12,000.

N. Weber, three-st'y dwell., 91 Hurlburt St.; cost, $4,500.

J. Galles, 2 two-st'y dwells., 233-235 North Market St.; cost, $5,500.

D. Cohen, two-st'y store and dwell., 3340–3342 Michigan Ave.; cost, $27,000; architect, L. B. Dixon.

E. C. Hartwell, 2 two-st'y dwells., 39–41 Pearson St.; cost, $12,000.

J. Joerasek, two-st'y dwell., 82 West Division St.; cost, $4,600.

S. W. Tgrakowski, two-st'y dwell., 335 North May St.; cost, $4,000.

C. Corlett, two-st'y flats, 370 Dayton St.; cost, $3,300.

Detroit.

BUILDING PERMITS.—The following permits have been granted since our last report:—

Thomas McGregor, two-st'y brick dwell., 40–42 Fremont St.; cost, $6,250.

G. F. Tinan, two-st'y brick dwell., 70 Abbott St.; cost, $5,000.

Peter Thirsen, two-st'y double brick dwell., 383–385 Thirteenth St.; cost, $4,000.

Benjamin Fisher, two-st'y brick dwell., 87 East Montcalm St.; cost, $3,500.

U. Armstrong, three-st'y brick dwell., 92 Washington Ave.; cost, $3,800.

Mary E. Gibbs, two-st'y brick dwell., 60 Erskine St.; cost, $10,000.

Wm. Scott & Co., five-st'y addition to Michigan Stove Works; cost, $14,500.

James Hogan, frame dwell. Seventeenth St.; cost, $3,500.

James B. McKay, frame dwell. Cass Ave.; cost, $4,500.

A. Chapoton, Jr., for Wm. Bealls, five-st'y brick store, Woodward Ave.; cost, $20,000.

W. B. & J. P. Moran, five-st'y brick store, Woodward Ave.; cost, $40,000.

N. Flattery, two-st'y brick dwell., 641 Jefferson Ave.; cost, $15,000.

N. J. Martell, two-st'y brick dwell., 183–185 East Montcalm St.; cost, $3,000.

W. C. Lantern, addition to brick dwell., 308 Howard St.; cost, $3,000.

W. H. Hollands & Son, brick addition to frame dwell., 178 East Montcalm St.; cost, $4,500.

Detroit Soap Co., brick storehouse, Dix Road; cost, $4,000.

William Cowir, brick stores, 44–46 Gratiot Ave.; cost, $25,000.

A. S. Varney, brick dwell., 22 East Alexandrine Ave.; cost, $2,900.

S. J. Martin, brick dwell., 443 Third Ave.; cost, $4,000.

H. S. Peoples, block of brick stores, Michigan Ave., cor. Welch Ave.; cost, $7,500.

C. H. Butler, brick dwell., Woodward Ave.; cost, $15,000.

Herbert Bowen, brick dwell., Forest Ave.; cost, $7,000.

E. C. Bowman, frame dwell., Hancock Ave.; cost, $3,500.

Neil Flattery will erect 2 brick houses on Jefferson Ave., costing $28,000.

St. Jocham Church, East Fort St.; cost, $40,000.

W. H. Holland & Son, brick dwell., Garfield Ave.; cost, $6,000.

H. O'Connell & Co., double frame dwell., 91 Ledyard St.; cost, $4,000.

N. W. Weber, brick dwell., 40 East Forest St.; cost, $5,000.

Kansas City, Mo.

BUILDING PERMITS.—R. P. Tribble, 2 brick dwells. at 1402 and 1404 Tracy Ave.; cost, $8,000.

Irving Queal, brick block on Tracy Ave.; cost, $5,000.

Mrs. Josephine Shultz, brick dwell. and business house, cor. Ninth and Troost Aves.

Dr. J. H. Duncan, brick dwell., cor. Thirteenth and Tracy Aves; cost, $6,500.

Kansas City White Lead Co., brick business block, cor. Eighth and Mill Sts.; cost, $11,000.

Minneapolis, Minn.

BUILDING PERMITS.—John Esslinger, three-st'y brick store-building, cor. Cedar Ave. and Third St., s; cost, $5,000.

E. S. Kenney, two-st'y wooden dwell., Park Ave., bet. Twentieth and Twenty-second Sts., s; cost, $6,000.

E. B. Galusha, two-st'y wooden dwell., cor. Thirteenth St. and Yale Pl.; cost, $6,000.

E. B. Galusha, two-st'y double wooden dwell., Yale Pl., bet. Thirteenth and Fourteenth Sts., s; cost, $6,500.

Mrs. Thomas McClary, two-st'y wooden dwell., Orlin Ave., near Seymour Ave.; cost, $3,700.

New York.

BUILDING PERMITS. — *Clinton St., No.* 148, five-st'y brick tenement, tin roof; cost, $18,000; owner, Edward Harris, 369 Grand St.; architect, Chas. Rentz.

Ludlow St., No. 56, five-st'y and basement brick tenement with stores in basement and first story, tin roof; cost, $10,000; owner, Joseph L. O'Brien, 92 Bowery; architect, F. Jenth.

Mulberry St., No. 23, five-st'y brick tenements with stores, tin roofs; cost, $16,000; owner, J. Searle Barclay, 64 West Thirty-eighth St.; architect, Julius Boekell.

Mott St., No. 39, five-st'y brick tenement with store, tin roof; cost, $9,500; owner, John P. Conlon, 301 West Fifty-fifth St.; architects, Berger & Baylies.

Suffolk St., No. 20, in rear, four-st'y brick workshop, tin roof; cost, $3,000; owners, Mrs. Theresa Schappert, 503 East Eighty-eighth St.; architect, J. C. Burne.

Washington St., No. 659, five-st'y brick tenement, tin roof; cost, $14,000; owner, Margaret Shaughnessy, on premises; architects, A. B. Ogden & Son; builder, P. J. Walsh.

Second Ave., s e cor. First St., 3 five-st'y brick tenements, tin roofs; cost, corner $34,000; others, $16,000 each; owner, Daniel Tier, Westchester, N. Y.; architect, M. Louis Ungrich.

West Eighteenth St., Nos. 148 *and* 150, three-st'y brick stable and dwell., tin roof; cost, $20,000; owner, H. O'Neill, 149 West Twentieth St.; architect, M. C. Merritt.

Twenty-first St., s s, 50′ 3″ w Second Ave., five-st'y brick tenement, tin roof; cost, $12,000; owner, J. C. Bremer, 76 Oakland St., Brooklyn, E. D.; architect, F. Weber.

East Twenty-fifth St., No. 330, five-st'y brick tenement, tin roof; cost, $12,000; owner, Emil Klappert, 328 East Twenty-fifth St.; architects, Berger & Baylies; builders, C. W. Klappert's Sons.

Eighth Ave., No. 543, four-st'y brick store and tenement, tin roof; cost, $14,500; owner, Emma Meier, 303 West Thirty-eighth St.; architect, M. Louis Ungrich; builders, Prodger Brothers and Alexander Moore.

Third Ave., Nos. 1521 *and* 1523, 2 five-st'y brick tenements and stores, tin roofs; cost, each, $18,000; owner, Eugene D. Bagen, 532 East Eighty-seventh St.; architect, Fred. T. Camp.

West Ninety-ninth St., No. 20, five-st'y brick tenement, tin roof; cost, $25,000; owner, Wm. B. Pettit, 444 West Thirty-fourth St.; architects, A. B. Ogden & Son.

Eighth Ave., w s, 75′ s Ninety-fourth St., 2 five-st'y brick tenements, tin roofs; cost, each, $20,000; owner and builder, Abraham E. Benson, 63 North Moore St.; architect, N. M. Whipple.

Grand Boulevard, e s, 67′ 4″ s One Hundred and Fourth St., five-st'y brick flat, tin roof; cost, $24,000; owner, Martha A. Lawson, 521 West One Hundred and Fourth St.; architect, M. Louis Ungrich.

Seventy-second St., n s, 149′ 6″ e Tenth Ave., 5 four-st'y brick (stone-front) dwells., tin roofs; cost, each, $25,000; owner, Robert Irwin, 42 West Fortieth St.; architects, Thom & Wilson.

One Hundred and Fifth St., s s, 375′ e Tenth Ave., five-st'y brick flat, tin roof; cost, $55,000; owners, Hoefer & Vincent, 446 West Fifty-seventh St.; architects, Thom & Wilson.

Tenth Ave., e s, 75′ n Ninety-eighth St., 2 five-st'y brick flats, tin roofs; cost, each, $19,000; owner and builder, David Christie, 413 West Fifty-seventh St.; architect, J. F. Wilson.

One Hundred and Twenty-second St., n s, 75′ e Seventh Ave., 2 three-st'y and basement brick dwells., tin roofs; cost, each, $12,500; owner and builder, Isaac A. Hopper, 214 West One Hundred and Twenty-third St.; architect, R. S. Townsend.

Sixth Ave., s w cor. One Hundred and Twenty-third St., 9 four-st'y and basement brick (stone-front) dwells., tin roofs; cost, each, $20,000; owner, A. B. Van Dusen, 2039 Sixth Ave.; architect, Chas. H. Beer.

One Hundred and Forty-first St., n s, 150′ e Eighth Ave., 2 four-st'y brick tenements, gravel roofs; cost, each, $12,000; owner, Mark S. Karr; Mark S. Stevens, builder and attorney for owner, 226 East One Hundred and Twenty-seventh St.; architect, J. H. Valentine.

One Hundred and Forty-second St., n s, 100′ e Eighth Ave., 4 four-st'y brick tenements, gravel roofs; cost, each, $12,000; owner, etc., same as last.

One Hundred and Forty-sixth St., n s, 175′ w Tenth Ave., five-st'y brick tenement, tin roof; cost, $10,000; owner, Murtha Garry, One Hundred and Forty-third St., w of Eighth Ave.; architect, James S. Wightman.

West One Hundred and Twenty-sixth St., No. 102, three-st'y and basement brick (stone-front) dwell., flat and mansard roof of tin, slate and copper; cost, $14,000; owner, Henry O'Neill, 222 West Fifty-seventh St.; architect, Wm. Collins; builder, G. H. Hardy.

Lincoln Ave., n e cor. Southern Boulevard, five-st'y brick piano-factory, tin and slate roof; cost, $30,000; owner, John B. Simpson, Jr., 12 West One Hundred and Twenty-ninth St.; architects, A. B. Ogden & Son.

One Hundred and Fifty-first St., n s, 275′ w Courtlandt Ave., two-st'y frame tenement, tin roof; cost, $6,000; owner, Christina Ludwig, 677 East One Hundred and Fifty-second St.; architects, Schmidt & Garwin; builder, not selected.

ALTERATIONS. — *Fiftieth St. to Fifty-first St.*, and *Sixth to Seventh Aves.*, altered for car-house and stables, iron beams and columns; cost, $20,000; owner, Broadway & Seventh Ave. R. R. Co., on premises; architect, S. D. Hatch.

West Thirty-first St., Nos. 223 *and* 225, raised one st'y, mansard and flat roof; cost, $4,000; owner, Rev. Chas. Da Nazzano, 135 West Thirty-first St.; architect, J. W. Cole; builder, J. Jordan.

East Fifty-third St., No. 1, three-st'y brick extension, tin roof; cost, $14,000; owner, Jeremiah W. Curtis, on premises; architect and builder, Richard V. Breese.

West Forty-fifth St., No. 60, rear altered, iron beams furnished; cost, $4,000; owner, T. M. Stewart, on premises; builder, E. Gridley.

East Fourteenth St., No. 218, four-st'y and basement brick extension, tin roof; also internal alterations; cost, $6,000; owner, Chas. J. Goeller, 212 East Fourteenth St.; architect, W. Graul.

East Eleventh St., No. 528, one-st'y brick extension, tin roof; cost, $5,000; owner, George Diehl, on premises; architect, F. Ebeling; builder, not selected.

East Sixty-third St., No. 2, altered to three-st'y dwell.; cost, $10,500; owner, C. A. Postley, 51 Park Ave.; architect, R. H. Robertson; builders, L. N. Crow and Smith & Bell.

One Hundred and Thirtieth St., n s, 100′ w Eleventh Ave., new brick smoke stack; cost, $6,000; owner, G. H. H. Butler, 126 East Twenty-ninth St.; architect, G. B. Pelham; builders, Van Dolsen & Arnott.

Grand St., No. 458, attic raised to full st'y; also, two-st'y brick extension, tin roofs; cost, $4,000; owner, D. Openheimer, on premises; architect, E. W. Greis.

Philadelphia.

BUILDING PERMITS. — *Point Breeze*, one-st'y pump house, 28′ x 33′; Atlantic Refining Co., owners.

Point Breeze, one-st'y storehouse, 75′ x 80′; Atlantic Refining Co., owners.

Point Breeze, one-st'y canning shop, 57′ x 92′; Atlantic Refining Co., owners.

Hanover St., n of Thompson St., three-st'y dwell., 17′ x 56′; Jno. S. Boldt & Son, contractors.

Seventeenth St., cor. Christian St., three-st'y dwell., 18′ x 56′; Guilbert & Keefe, contractors.

Forty-ninth St., cor. Woodland Ave., 2 two-st'y dwells., 16′ x 43′; Michael Dehaven, contractor.

West Fetter Lane, No. 10, three-st'y mill, 30′ x 80′; J. B. Stanaur, contractor.

Walnut St., w of Forty-second St., 2 three-st'y dwells., 28′ x 59′; Jacob Myers, contractor.

Jefferson St., No. 2523, two-st'y dwell., 17′ 6″ x 50′; E. Schmidt, contractor.

Long Lane St., cor. Federal St., 5 two-st'y dwells., 16′ x 45′; Thos. S. Marshall, owner.

Cherry St., e of New St., 8 two-st'y dwells., 14′ x 44′; W. Steele, contractor.

Hirst St., No. 506, three-st'y dwell., 14′ x 27′; F. Fink, owner.

Sixth St., cor. Venango St., two-st'y stable, 15′ x 30′; John Mander, contractor.

Broad St., s of Barks St., four-st'y dwell., 21′ x 85′; Jas. E. Cooper, contractor.

Turner St., above Erie Ave., two-st'y dwell., 16′ x 56′; A. Zim, owner.

Grays Ferry Road, cor. Seventy-second St., two-st'y dwell., 18′ x 32′; B. T. Green, owner.

Broad St., n e cor. Washington St., 2 sheds, 42′ x 150′; G. B. Newton & Co., owners.

Fairhill St., n of Cumberland St., one-st'y shed, 20′ x 60′; Geo. Kessler, contractor.

Second St., n e cor. Willow St., five-st'y factory, 30′ x 57′; Geo. Kessler, contractor.

Ridge Ave., n e cor. Dauphin St., three-st'y dwell., 17′ x 56′; W. Albrecht, owner.

Twelfth St., s of Wolf St., three-st'y dwell., 18′ 4″ x 44′; W. Albrecht, owner.

Eleventh St., cor. Christian St., addition, 22′ x 30′; A. Ewing, contractor.

Haverford St., w of Sixty-fifth St., 2 two-st'y dwells., 16′ x 42′; Leger & Bro., contractors.

Armat St., w of Hancock St., two-st'y store, 20′ x 32′; A. Jenkinson, owner.

North Sixth St., No. 2131, one-st'y store, 19′ x 71′; D. C. Schuyler, owner.

Haines St., bet. Chew and Musgrove Sts., 2 two-and-one-half-st'y stores, 16′ x 42′; J. Broadbent, owner.

Ninth St., cor. Mifflin St., 2 two-st'y dwells., 15′ x 30′; H. Weisner, contractor.

Pine St., w of Sixty-third St., one-st'y mill, 19′ 6″ x 65′; Wm. Douglass, contractor.

Jefferson St., s e cor. Winchester St., three-st'y store, 17′ x 42′; F. Gillett, contractor.

St. Louis.

BUILDING PERMITS. — Forty-four permits have been issued since our last report, nine of which are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows: —

E. Stover, 2 adjacent two-st'y brick dwells.; cost, $7,000; A. Beinke & Co., architects; A. J. Riddle, contractor.

Wm. Lesser, 3 adjacent two-st'y brick dwells.; cost, $8,000; A. Beinke & Co., architects; Beckmeier & Rieckmann, contractors.

John Leicht, two-st'y brick dwell.; cost, $2,700; Wm. Gahl & Co., contractors.

McCreeney Heirs, alterations at the Laclede Hotel; cost, $10,000; J. S. Taylor, architect; Higgin & Bro., contractors.

Schlegel, two-st'y brick dwell.; cost, $2,500; F. H. Goss, contractor.

Mrs. E. Meyer, two-st'y brick dwell.; cost, $2,800; Henry Ellermann, contractor.

Henry Feldwisch, two-st'y brick dwell.; cost, $2,500; Henry Ellermann, contractor.

A. Temme, two-st'y brick dwell.; cost, $2,500; S. T. Simmons, architect; H. Schulte, contractor.

Chas. A. Lee, two-st'y brick dwell.; cost, $4,000; Peabody & Stearns, architects; David Davis, contractor.

Henry Timpken, four-st'y brick carriage factory; cost, $10,000; McGrath, architect; F. C. Bonsack, contractor.

Mrs. E. A. Clark, five-st'y brick business house; cost, $18,000; I. S. Taylor, architect; B. Weber & Co., contractors.

Geo. Blackman, two-st'y frame dwell.; cost, $3,000; Peabody & Stearns, architects; F. Lane, contractor.

St. Paul, Minn.

BUILDING PERMITS.—One-st'y brick store-room, s s of East Third St., bet. Robart and Minnesota Sts.; cost, $2,000; owner, National German American Bank.

Two-st'y frame double dwells., n s of Iglehart St., bet. Western and Arundel Sts.; cost, $5,000; owner, C. L. Larpentern.

Two-st'y frame store and dwell., w s of Rice St., bet. Wazota and Melford Sts.; cost, $5,000; owner, P. G. Olson.

Two-st'y frame dwell., s s of Hennipin St., bet. St. Albans and Grotto Sts.; cost, $2,000; owners, Cochran, Rice & Walsh.

Two-st'y brick store and dwell., e s of Dakota Ave., bet. Colorado and Delos Sts.; cost, $5,000; owner, Mr. Sheibele.

Two-st'y brick veneer store and dwell., e s of Fort St., bet. Ninth and Tenth Sts.; cost, $3,000; owner, John Schreil.

Two-st'y frame dwell., s s of Arch St., bet. Jackson and Sylvan Sts.; cost, $2,000; owner, John Lalley.

Four-st'y brick block stores and hotel, n s of Fifth St., bet. Wabasha and Cedar Sts.; owner, A. R. Capstrant.

Two-st'y brick veneer dwell. and store, n s of Thirteenth St., bet. Mississippi and Orient Sts.; cost, $4,800; owner, W. F. Stetson.

Two-st'y frame dwell., e s of Broadway, bet. Tenth and Eleventh Sts.; cost, $2,400; owner, Andrew Nippolt.

Bids and Contracts.

CINCINNATI, O.—The following are the bids for furniture for the custom-house: —

A. H. Andrews & Co., Chicago, $23,510.30; Tomlinson & Carsley, Chicago, $30,511.25; Edward E. Swiney, Chicago, $19,827 (*accepted*); H. J. Fitzpatrick & Co., New York, $22,003.10; Middleton Furniture Manufacturing Co., Middleton, Pa., $25,637.85; Phœnix Furniture Co., Grand Rapids, Mich., $22,350.48; the Robert Mitchell Furniture Co., Cincinnati, $23,310.

The following are the bids for gas-fixtures for the custom-house:—

Iden & Co., New York, $9,609.60; Bergman & Co., New York, $9,583.50; Mitchell, Vance & Co., New York, $9,639.45; R. A. Robbins, New York, $10,951; R. Hollings & Co.; Boston, $8,772.75; the Horn, Banner and Forsyth Manufacturing Co., Philadelphia, $10,129; the Horn, Banner and Forsyth Manufacturing Co., Philadelphia, $9,307.50; the Horn, Banner and Forsyth Manufacturing Co., Philadelphia, $7,375.25; the Horn, Banner and Forsyth Manufacturing Co., Philadelphia, $6,355.25; McHenry & Co., Cincinnati, $9,444.40 (*accepted*).

CINCINNATI, O., BUFFALO, N.Y., AND FRANKFORT, KY.—The following are the bids for standard furniture for United States buildings at Cincinnati, O.; Buffalo, N. Y., and Frankfort, Ky.: —

A. H. Davenport, Boston, $15,960; Middleton Furniture Manufacturing Co., Middleton, Pa., $17,862.30; R. A. Robbins, New York, $21,513.80; Hersee & Co., Buffalo, N.Y., $15,636; Tomlinson & Carsley, Chicago, $19,896.50; A. H. Andrews & Co., Chicago, $15,726; Edward E. Swiney, Chicago, $15,937.90; the Robert Mitchell Furniture Company, Cincinnati, $13,839.53 (*accepted*).

PEORIA, ILL.—The following is an abstract of the bids for stone-work and setting, and for brickwork of the post-office, etc.: —

P. G. Straub & Co., stone-work, $12,990.

E. R. Brainerd & Co., stone-work, $11,485; stone and brick work, $15,425.

Ballance & Jans, stone-work, $13,700.

F. B. Hasbrock, brickwork, $4,775.

A. J. White, brickwork, $4,520.

WASHINGTON, D. C.—The Postmaster-General has awarded the contract for supplying steel mail-catchers, for the entire service, during the coming year to Manly & Cooper M'f'g Co., cor. Forty-second St. and Elm Ave., Philadelphia, on their bid of $3.38 each.

The other bids of which there were 12, varied from $3.43 to $6.95. They will be used on the mail-cars throughout the United States.

COMPETITION.

COUNTY JAIL.

[At Montgomery, Ala.]

OFFICE OF THE BOARD OF REVENUE,
OF MONTGOMERY COUNTY,
MONTGOMERY, ALA., July 6, 1885.

Plans and specifications for the construction of a jail in the city of Montgomery, Ala., will be received by the Board of Revenue, of Montgomery County, **until Monday, July 27th, 1885, at 12 M.**

Said jail to hold at least 100 inmates, and contain office and 4 rooms for jailor, kitchen, dining-room, hospital, misdemeanant and solitary cells for both male and female, whites and blacks separate, heating, ventilating and water arrangements, all after the modern improvements.

Length of building not to exceed 100′, and width not more than 44′. This provides for light on each side of the building. Size of lot 50′ x 160′.

The building to cost not more than $35,000.

The successful architect to receive 2 per cent on the cost of the building.

The Board of Revenue reserves the right to reject any and all plans and specifications.

By order of the Board of Revenue.

499 W. H. HUBBARD, Clerk.

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New Advertisements.

TERRE HAUTE STONE WORKS CO. (Terre Haute Ind.), Stone. Page xviii.
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WANTED.

AN AGENCY.—A man of good business habits, acquainted with the architects, builders and masons of Philadelphia, would like to represent some good firm in the building material line; salary or commission. Address R. A. Keabody, 249 South Sixth St., Philadelphia, Pa. 499

WANTED.

PARTNERSHIP.—A man thoroughly versed in architectural work from sketches to details, and familiar with New York city work, wishes to form business relations with a New York architect. Address X., care H. M. Carleton, 21 Park Row, N.Y. 505

WANTED.

SITUATION—Wanted, by a competent draughtsman, situation in an architect's office. References given. Address: "R. O." this office. 500

WANTED.

ARCHITECTURAL CLERK.—Wanted, a position as architectural clerk, by a young man capable of superintending and laying out work. Address, "Clerk," care *American Architect*, 211 Tremont St., Boston, Mass. tf

PROPOSALS.

DIKE. [On the Delaware River.]

U. S. ENGINEER OFFICE, 1125 GIRARD STREET, PHILADELPHIA, PA., July 3, 1885.

Sealed proposals, in duplicate, will be received at this office **until 11, A. M., Thursday, July 23, 1885**, and opened immediately thereafter, for constructing a dike on Delaware River, between Hog and Maiden Islands.

For forms, specifications and all information, apply at this office. HENRY M. ROBERT,
499 Lieut.-Col. of Engineers, U. S. Army

DIKE. [On the Delaware River.]

U. S. ENGINEER OFFICE, 1125 GIRARD STREET, PHILADELPHIA, PA., July 3, 1885.

Sealed proposals, in duplicate, will be received at this office **until 11 A. M., July 23, 1885**, and opened immediately thereafter, for constructing a dike in Delaware River, between Fisher's Point and Petty's Island.

For forms, specifications and all information, apply at this office. HENRY M. ROBERT,
499 Lieut.-Col. of Engineers, U. S. Army.

GATE-HOUSE. [At Croton Dam, N. Y.]

AQUEDUCT COMMISSIONER'S OFFICE, ROOM 209, STEWART BUILDING, 280 BROADWAY, NEW YORK, July 6, 1885.

Bids or proposals for constructing Section No. 1 of the new Croton aqueduct, in Westchester County, will be received at this office **until Wednesday, July 29, 1885, at 2 o'clock**, P. M., at which place and hour they will be publicly opened and read by the Aqueduct Commissioners, and the award of the contracts will be made by said Commissioners as soon thereafter as practicable.

The portion of the said aqueduct for the construction of which bids are now invited is the new gate-house at Croton Dam, and its connections with the old and new aqueduct and with Croton Lake.

Each bid must be inclosed in a sealed envelope, endorsed with the name of the person or persons making the same.

Each bid must state the name and place of residence of the person making the same, and the names of all persons interested with them therein; also that it is made without any connection with any other person making another bid for the same work, and is in all respects fair and without collusion or fraud; that no member of the Aqueduct Commission or of the Common Council, no head of a department, chief of a Bureau, deputy thereof, or clerk therein, or other officer of the corporation, or any person in the employ of the Aqueduct Commissioners, is directly or indirectly interested in the bid, or in the work to which it relates or in the profits thereof.

Each bid must be verified by the oath of the party making the same, that the several matters therein stated are true, and must be accompanied by a certified check upon a national or State bank of the City of New York, drawn to the order of the Comptroller of the City of New York, for an amount not less than five per cent of the amount of the security required for the faithful performance of the contract. Such check must not be enclosed with the bid, but must be delivered to the Aqueduct Commissioners, or to their Secretary, for delivery to the Comptroller. All deposits except those of the successful bidder will be returned by the Comptroller to the persons making the same, within three days after the contracts are awarded.

If the successful bidder shall neglect or refuse to execute the contract within ten days after notice of the award to him, the amount of his deposit will be forfeited to and retained by the City of New York, as liquidated damages for such neglect or refusal, pursuant to the provisions of Section 29 of Chapter 490 of the laws of 1883; but if he shall execute the contracts within the time aforesaid, the amount of his deposit will be returned to him.

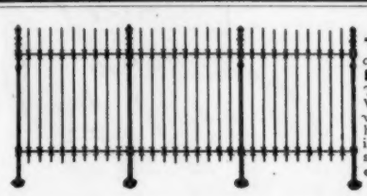
The amount of security required on the contract for this section is fifty thousand dollars, and the surety required is that of two or more householders or resident freeholders of the State of New York (who must collectively qualify for double the amount of the bond), or approved surety companies incorporated under the laws of this State.

The names and residences of the sureties must be stated in the bids.

The Aqueduct Commissioners reserve the right to reject any and all bids if they deem it for the best interest of the city so to do.

Blank forms of bid or proposal, and proper envelopes for their enclosure, forms of the contract, specifications and bond, and all other information required, can be obtained at the above-named office of the Aqueduct Commissioners.

By order of the Aqueduct Commissioners.
500 JAMES W. McCULLOH, Secretary.



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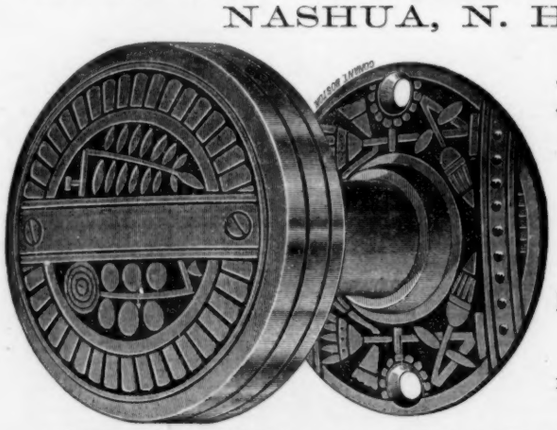

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175 Randolph St., Chicago; 170 N. 4th St., Philadelphia.

PROPOSALS.

IRON ROOF. [At Pensacola, Fla.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., July 14th, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 12th day of August, 1885**, for furnishing and putting in place complete, the iron-roof framing, etc., for the court-house, post-office, etc., building at Pensacola, Fla., in accordance with drawings and specification, copies of which and any additional information may be had at this office, or the office of the superintendent.

Bids must be accompanied by a certified check for $500. M. E. BELL,
499 Supervising Architect.

CARPETS. [At Washington, D. C.]

TREASURY DEPARTMENT, WASHINGTON, D. C., June 17, 1885.

Sealed proposals will be received at this department **until 2 o'clock, P.M., Tuesday, July 21, 1885**, for supplying 10,000 yards of Brussels and Wilton carpet, with the necessary border for the same, and 8,000 yards of carpet lining for U. S. public buildings during the fiscal year ending June 30, 1886.

No bid will be considered unless made by a manufacturer or regular dealer in carpets, and accompanied by a deposit of $1,000.

The department reserve the right to increase or decrease the quantity, and to reject any or all bids, or parts of bids, and to waive defects.
499 DANIEL MANNING, Secretary.

ASPHALT ROOFING. [At Cincinnati, O.]

OFFICE BOARD OF TRUSTEES TO REBUILD COURT-HOUSE, HAMILTON CO., O., SOUTH COURT-HOUSE YARD, CINCINNATI, O., July 8, 1885.

Sealed bids will be received at this office **until Saturday, July 25, 1885, at 9.30 o'clock**, A. M., for furnishing the asphalt roofing in rebuilding the court-house, in Hamilton County, O., according to plans and specifications on file at this office, and at the office of Jas. W. McLaughlin, architect, Nos. 46 and 47 Johnston Building.

The bids must be made on the blanks that will be furnished on demand by said Board.

The Board reserves the right to reject any and all bids. By order of the Board.
499 J. CLIFFORD GOULD, Clerk.

STONE AND BRICK WORK. [At Concord, N. H.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., July 11, 1885.

Sealed proposals will be received at the office of the Supervising Architect of this Department **until 2 P. M., on the 10th day of August, 1885**, for furnishing and setting all the stone-work and brickwork required for the basement and superstructure of the post-office, court-house, etc., building at Concord, N. H., in accordance with drawings and specifications, copies of which and any additional information may be obtained at this office, or the office of the superintendent of the building.

Bids must be accompanied by a certified check for $1,000 for stone, and $500 for brick work.
499 M. E. BELL, Supervising Architect.

STONE AND BRICK WORK. [At Council Bluffs, Io.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., July 9, 1885.

Sealed proposals will be received at the office of the Supervising Architect of this Department **until 2 P. M., on the 10th day of August, 1885**, for furnishing and setting all the stone-work and brickwork required for the superstructure of the post-office building, at Council Bluffs, Io., in accordance with drawings and specification, copies of which and any additional information may be obtained at this office, or the office of the superintendent of the building, after the 17th instant.

Bids must be accompanied by a certified check for $1,000 for stone, and $500 for brick work.
M. E. BELL, Supervising Architect.

PROPOSALS.

PENITENTIARY.

[At Allegheny, Pa.]

ALLEGHENY, PA., June 29, 1885.

Sealed proposals will be received by the Board of Inspectors of the Western Penitentiary of Pennsylvania **until 7 o'clock** P. M. **of Tuesday, July 14th, 1885,** for the necessary excavation, piles and pile-driving, concrete and stone work, in the foundations of the new south wing of said penitentiary.

Separate bids will be received for each branch of the work.

Plans and specifications can be examined at the office of E. M. Butz, architect, No. 114 Federal Street, Allegheny.

The right to reject any or all bids is reserved.

EDWARD S. WRIGHT,
498 Warden.

IRON-WORK.

[At Washington, D. C.]

OFFICE OF BUILDING FOR STATE, WAR AND NAVY DEPARTMENTS, WASHINGTON, D. C., July 3, 1885.

Sealed proposals for furnishing, fitting and delivering and putting in place complete, all the iron-work required for the library room in the west wing of the building for State, War and Navy Departments in this city, will be received at this office **until 12** M., **on July 29th, 1885,** and opened immediately thereafter in presence of bidders.

Most of the ornamental work is to be electro-plated.

Specifications, general instructions to bidders, and blank forms of proposal will be furnished on application to this office. THOS. LINCOLN CASEY,
499 Colonel, Corps of Engineers.

STONE AND BRICK WORK.

[At Erie, Pa.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., June 23, 1885.

Sealed proposals will be received at this office **until** 2 P. M., **on the 28th day of July, 1885,** for furnishing and setting all the stonework and brickwork required for the superstructure of the court-house and post-office building at Erie, Pa., in accordance with drawings and specifications, copies of which may be seen and any additional information obtained at this office or the office of the superintendent of the building.

Bids must be accompanied by a certified check for $1,000 for stone and $500 for brick work, drawn to the order of "The Secretary of the Treasury."

499 M. E. BELL, Supervising Architect.

FIRE-PROOF BUILDING FOR ARMY MEDICAL MUSEUM AND LIBRARY.

[At Washington, D. C.]

WASHINGTON, D. C., 612 Seventeenth St., July 9, 1885.

Sealed proposals for the erection of a fire-proof building for the Army Medical Museum and Library, to be three-st'y in height, with basement and attic, to cover about 23,000 square feet of surface, and to be located at the s e cor. of the Smithsonian Grounds, will be received at this office **until August 7th, 1885, at 12** M., and opened immediately thereafter in the presence of bidders.

Specifications, general instructions to bidders, and blank forms of proposal will be furnished on application to this office. THOS. LINCOLN CASEY.
500 Colonel, Corps of Engineers.

IRON BEAMS.

[At Ottawa, Can.]

DEPARTMENT OF PUBLIC WORKS, OTTAWA, CAN., July 2, 1885.

Sealed tenders, addressed to the undersigned, and endorsed "Tender for Rolled Iron Joists and Steel-plate Girders for the New Departmental Buildings, Wellington St., Ottawa, Can.," will be received at this office **until Saturday, the 25th of July next,** inclusively, for the supply and erection of rolled-iron joists and steel-plate girders for the new Departmental Buildings, Wellington St., Ottawa, Can.

Plans and specifications can be seen at the Department of Public Works, on and after Monday, the 6th day of July.

Tenders must be made on the printed forms supplied.

Each tender must be accompanied by an *accepted* bank check, made payable to the order of the Honorable the Minister of Public Works, *equal to five per cent* of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called on to do so, or if he fail to complete the work contracted for. If the tender be not accepted, the check will be returned.

The Department will not be bound to accept the lowest or any tender.

By order, A. GOBEIL, Secretary.
499

REFORMATORY BUILDINGS.

[At Huntingdon, Pa.]

OFFICE OF THE BUILDING COMMISSIONERS, STATE INDUSTRIAL REFORMATORY, HUNTINGDON, PA.

Sealed proposals endorsed "Proposals for State Industrial Reformatory," and addressed to the undersigned, at Huntingdon, Pa., will be received **until 10 o'clock,** A.M., **on July 22, 1885,** for the following work on the grounds of the State Reformatory, near Huntingdon, Pa., including the furnishing of all materials.

For Ward "C" and School-Building.
For Warden's Houses and Main Entrance.
For Boiler-House and Stack.
For Curved portion of Outer Wall Foundation.
For Drainage.

Plans, drawings and printed specifications can be seen at the office of the Secretary, and at Wilson Bros. & Co., Engineers and Architects, 435 Chestnut St., Philadelphia, or a printed copy of the specifications sent to any address within the State upon application.

Bidders must be practical and responsible builders, and will be required to give satisfactory security for the faithful performance of the work.

All proposals for work will be made on blanks furnished by the Secretary on application.

The Commissioners reserve the right to reject any or all bids. W. B. HART,
499 Secretary.

STATE FAIR BUILDINGS.

[At Columbus, O.]

Proposals will be received at the office of the Ohio State Board of Agriculture **until 12 o'clock, noon, August 3d,** for furnishing the material and erecting the following buildings on the new Ohio State Fair Grounds at Columbus, viz.:—

Machinery Hall, Grand Stand, Band Stand, Judges' Stand, Horse Stables, Cattle Stables, and buildings for Sheep, Swine and Poultry.

Plans and specifications can be seen at the office of Terrell & Morris, Architects, 45 North High St., Columbus, O., on and after July 10.

All proposals must be accompanied by a sufficient guarantee that the contract will be entered into if awarded. The Board reserves the right to reject any or all bids. For particulars, address the Ohio State Board of Agriculture, Columbus, O. 500

CHURCH.

[At Augusta, Me.]

Proposals for building St. Mark's Church, Augusta, Me., will be received **up to and including July 20, 1885.**

The church to be of stone.

Plans and specifications may be seen at the office of the architect, Richard M. Upjohn, Trinity Building, New York, or the office of Winfield S. Choate, Water St., Augusta, Me., to whom all bids are to be forwarded.

The right is reserved to reject any and all bids.

WINFIELD S. CHOATE,
499 Clerk of the Vestry.

SOLDIERS' MONUMENT.

[At Baxter Springs, Kans.]

OFFICE NATIONAL CEMETERIES, WASHINGTON, D. C., June 27, 1885.

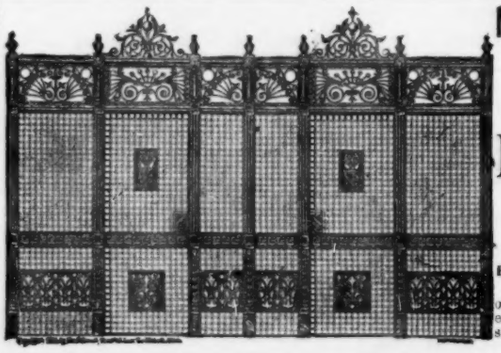
Sealed proposals, in triplicate, with a copy of this advertisement attached to each, will be received at this office **until Friday, July 31, 1885,** for furnishing and erecting a soldiers' monument of marble or granite in the City Cemetery at Baxter Springs, Kans.

Specifications and blank forms of proposals can be secured on application to the depot quartermasters at St. Louis, Mo., Chicago, Ill., and Fort Leavenworth, Kans., and at this office.

Proposals should be endorsed "Proposals for Monument," and addressed to the undersigned. They will be opened at this office at noon on the date above named, when bidders are invited to be present.

The right is reserved to reject any or all bids.

R. N. BATCHELDER,
499 Deputy Q. M. General U. S. Army.



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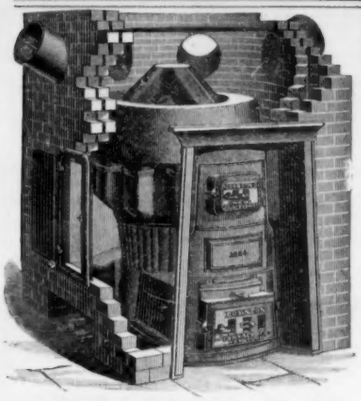

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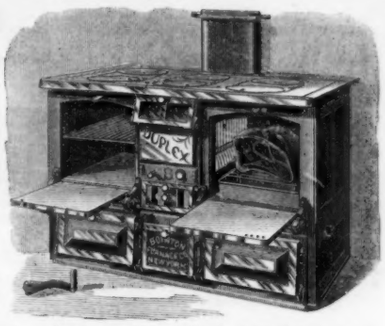

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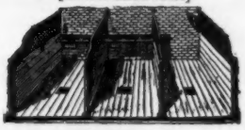

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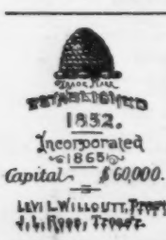

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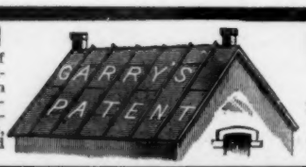

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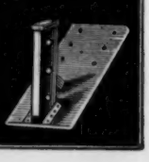

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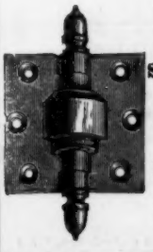

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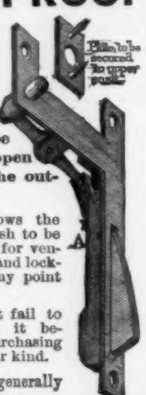

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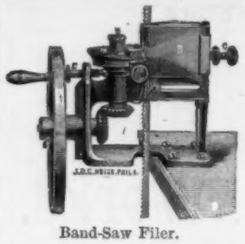
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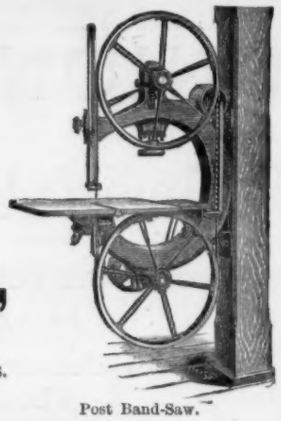
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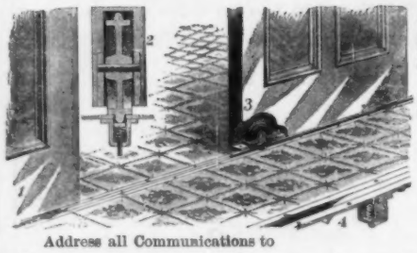

Figure 1 shows door open with centre rail level with floor. Figure 2, section of sheave, showing its position on rail. Figure 3 shows door closed with sheaves placed and centre rail depressed. Figure 4 shows track running off in the recess.

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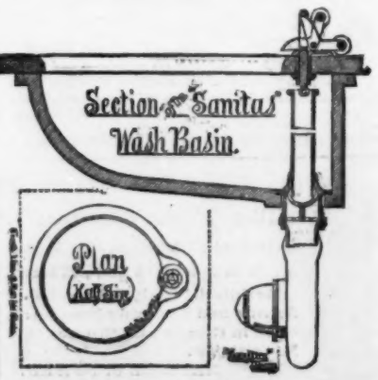

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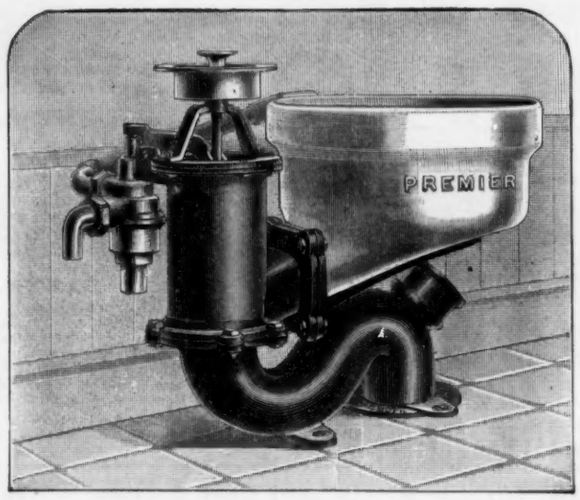

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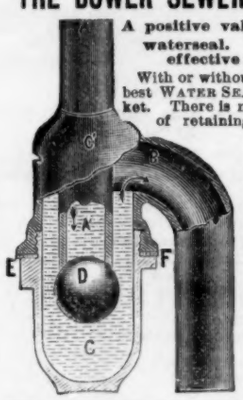

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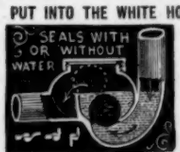

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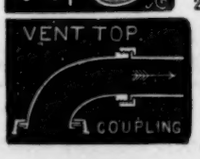

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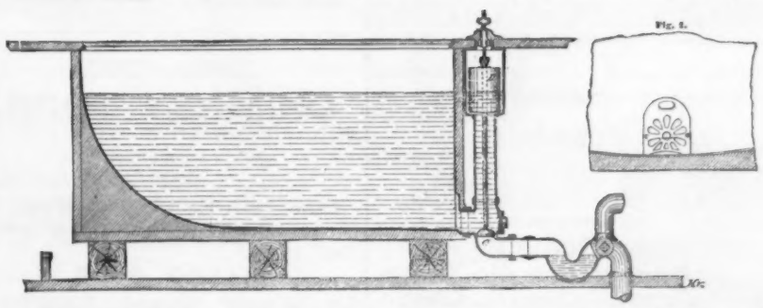

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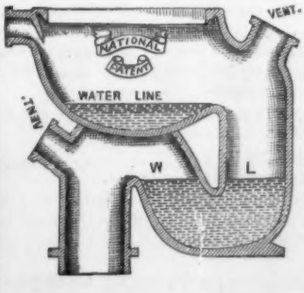

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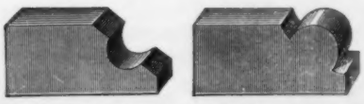

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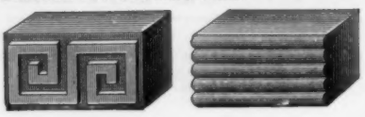

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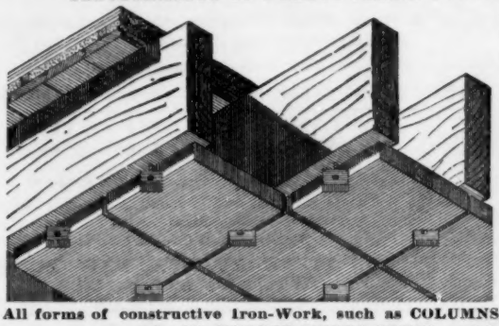

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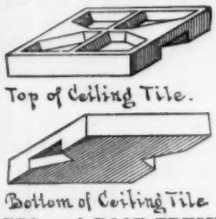

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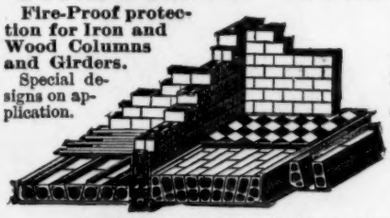

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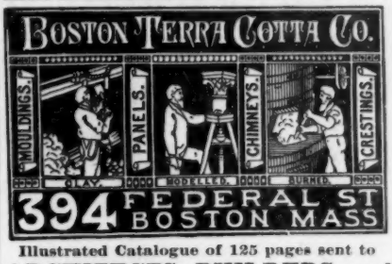

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